

## NEOLITHIC DITCHED ENCLOSURES IN SOUTHERN PORTUGAL (4<sup>TH</sup> MILLENNIUM BC): NEW DATA AND NEW PERSPECTIVES

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### Abstract:

This paper presents some new contextual data on five Neolithic ditched sites located in Alentejo hinterland (Perdigões, Horta do Pinheiro 6, Horta Nova 4, Estácio 6 and Cortes 1). An inventory of the available radiocarbon dates for the Neolithic (with twelve new dates) is provided and several aspects on the arising and early developments of the regional ditched enclosures are debated, e.g. spatial distribution, construction procedures, social re-cutting practices, infilling and depositional processes, diversity and possible relation among megalithic structures and ditched enclosures.

**Keywords:** Ditched enclosures, Neolithic, South Portugal.

### Resumo:

**Recintos de fossos neolíticos no Sul de Portugal (IV milénio AC): novos dados e novas perspectivas.**

O texto apresenta os dados contextuais recentemente obtidos para cinco sítios neolíticos com fossos localizados no interior alentejano (Perdigões, Horta do Pinheiro 6, Horta Nova 4, Estácio 6 e Cortes 1), reúne um inventário das datações de radiocarbono disponíveis para recintos de fossos neolíticos (publicando doze novas datas) e aborda vários aspectos relativos à emergência e desenvolvimento inicial dos recintos de fossos na região: distribuição espacial, processos construtivos, práticas sociais de recorte, processos de enchimento e deposições, diversidade e uma possível relação entre recintos megalíticos e recintos de fossos são várias das questões discutidas.

**Palavras-chave:** Recintos de fossos, Neolítico, Sul de Portugal

*Received: 7 March, 2017; Accepted: 27 June, 2017*

## 1. INTRODUCTION

After a period of an impressive rhythm of discoveries during the last decade and a half (VALERA 2013a), ditched enclosures are now a familiar presence within the Neolithic and Chalcolithic landscapes of Southern Portugal hinterland, where they present a major concentration in the Guadiana River and in the eastern limits of the Sado River basins. Research has overcome the initial astonishment in face of the numbers, concentration, dimensions, and diversity of these sites and is now deeply engaged with the understanding of their social roles in the trajectories of the Neolithic and Chalcolithic societies in the region.

A first overview of the development of ditched enclosures phenomena in Portugal is already available in Valera (2012, 2013a, 2015). Nevertheless, the research of this topic in the country is still dealing with a significant lack of empirical data for most of the sites, namely chronology and internal characterization of each enclosure, creating problems to the definition of their social nature and role.

However, in parallel with specific research projects designed to identify and characterize new ditched enclosures (VALERA & BECKER 2011; VALERA & PEREIRO 2013), recent interventions in the context of impact assessment projects and emer-

gency archaeology have been providing important new information. That is the case of the four sites, all of them discovered and surveyed in the context of the Alqueva's dam water supply network construction (promoted by EDIA S.A.), that, along with the research undertaken in Perdigões, offered new evidences to understand the genesis and early development of ditched enclosures during the Neolithic in the Alentejo region.

This new data encourages the debate on some ideas regarding the emergence of ditched enclosures, their distribution and chronology and some of the social practices closely related to their nature during the 4<sup>th</sup> millennium BC.

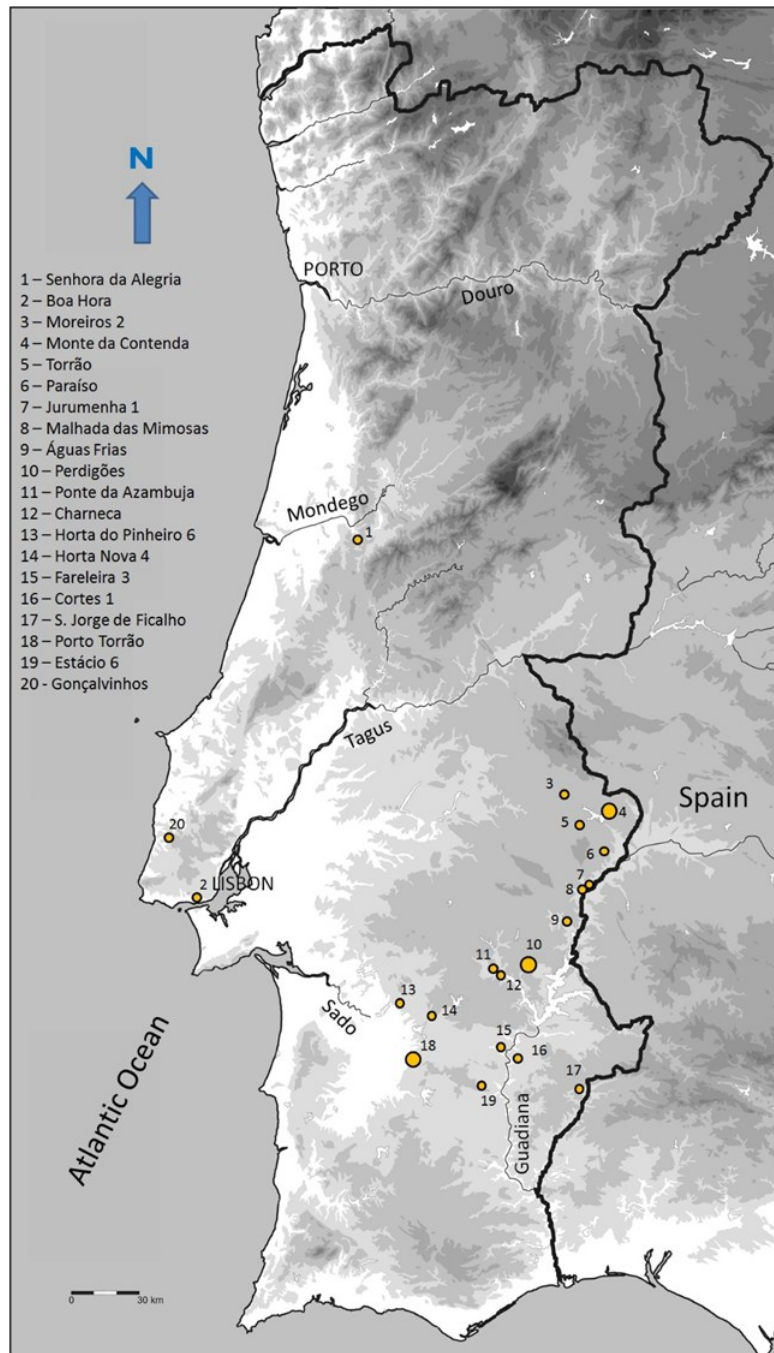
## 2. THE NEW DATA

The sites are all located in the Alentejo region, raising the number of Neolithic ditched sites known in Portugal to 20 (Fig. 1), being 17 of them concentrated in the Southern hinterland of the Alentejo plains. Regarding the sites considered here, Cortes 1 is in the left bank of the Guadiana River and Quinta do Estácio 6 in right bank. The other two, Horta Nova 4 and Horta do Pinheiro 6, are in the eastern limits of the Sado River basin, in the border of the Hercynian basement with the sedimentary basins of the Sado and the Tejo rivers, a geological boundary that is coincident with the

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**Fig. 1.** Sites with Neolithic ditches in Portugal.  
**Fig. 1.** Sítios com fossos neolíticos em Portugal.

western limits of the distribution of the ditched enclosures in the region (VALERA 2013a).

### 2.1. Cortes 1

The ditched enclosure of Cortes 1 is located in the Brinches parish at the Serpa municipality included in Beja district (VALERA *et al.* 2014a). The site is in the flat top of a relatively unobtrusive elevation with 147 m of altitude that provides a good vis-

ual control over the surrounding landscape. The enclosure is located over a bedrock of Miocene limestone marls, between two streams that run to the Guadiana River 2,5 km east of the site, the Barranco de Zambujeira in the North and Ribeira de Pias in the South.

The enclosure was identified when a trench for water supply network exposed two opposite sections of the ditch. The sections suggested a sub-circular or ellipsoidal plan (Fig. 2), with 21 m wide in the inter-

nal crossed area. The ditch is relatively large, varying between 2,5 and 3 m wide, but not so deep (0,5 of average depth), presenting a convex profile (Fig. 3).

Close to the central area of the enclosure, there was an association of 3 pits partially overlapped. An alveolus of a menhir was excavated in the sediment infillings of the eastern pit, the one that was closest to the centre. Part of the base of the granite standing stone was broken *in situ* inside the alveolus and the rest was laying at the surface, together with another granitic menhir (Fig. 4). Finally, next to the alveolus, there was

another pit (near the centre of the enclosure), with an oval plan (0,76 x 60 m) and vertical walls (0,52 m deep), filled with one deposit incorporating some stones (namely, granite hand gridding stones). Outside the enclosure, in both directions of the trench, other pits were detected and excavated, providing no archaeological artefacts. In fact, the archaeological material recovered in these contexts is rare, only some manual pottery shards, some stone hammers, and fragments of gridding stones were found. No organic materials were recovered.

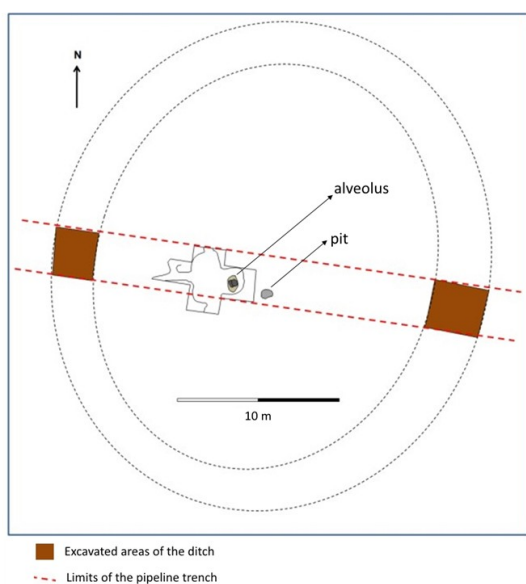


Fig. 2. Plan of the enclosure of Cortes 1.  
Fig. 2. Planta do recinto de Cortes 1.

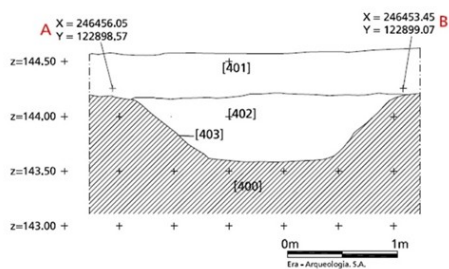


Fig. 3. Section of the ditch of Cortes 1 (photo scale: 30 cm).  
Fig. 3. Secção do fosso de Cortes 1 (escala da foto: 30 cm).



Fig. 4. 1. Alveolus inside the enclosure; 2. Menhir that would be in the alveolus; 3. Menhir at the surface.

Fig. 4. 1. Alvéolo no interior do recinto; 2. Menhir que estaria no alvéolo; 3. Menir à superfície.

Facing the absence of organic material and the scarcity of artefacts, Cortes 1 enclosure was included in a research project, a partnership between Era Arqueologia S.A. and the Instituto Tecnológico e Nuclear, aiming to date negative features. Optical Stimulated Luminescence and geochemical analysis was undertaken to date and characterize the origin and deposition conditions of the infillings (SANTOS 2015).

The geochemical study showed that the sedimentary infilling was composed from local materials resulting probably from a colluvial process. Regarding the OSL results, they provide a date of  $7,6 \pm 0,5$  ka (SANTOS 2015: 232). That puts the central point of the standard deviation in the very beginning of the Early Neolithic.

## 2.2. Horta do Pinheiro 6

Horta do Pinheiro 6 is situated in Torrão parish, in Alcácer do Sal municipality, Setúbal dis-

trict. It is located in a smooth slope near a subsidiary stream of the Xarrama River that runs North and West of the site. The area is composed by slightly weathered diorites and quartz diorites from the Palaeozoic, corresponding to the western border of the Hercynian Zone of Ossa Morena with the Miocene deposits of the Sado basin (C.G.P., 1:50000, fl. 39D).

This area was crossed by a long trench for a pipeline, which revealed several archaeological contexts of different prehistoric and historic times. Among these contexts, a section of a small ditch, measuring 1,5 m wide and 0,60 m deep, was surveyed (Fig. 5). It presented a “V” shape profile and was infilled with two deposits, one corresponding to a first infilling [105] and the other corresponding to a re-cutting [103], providing an assemblage of pottery shards, lithics (Table 1) and faunal remains (Tables 2 and 3).

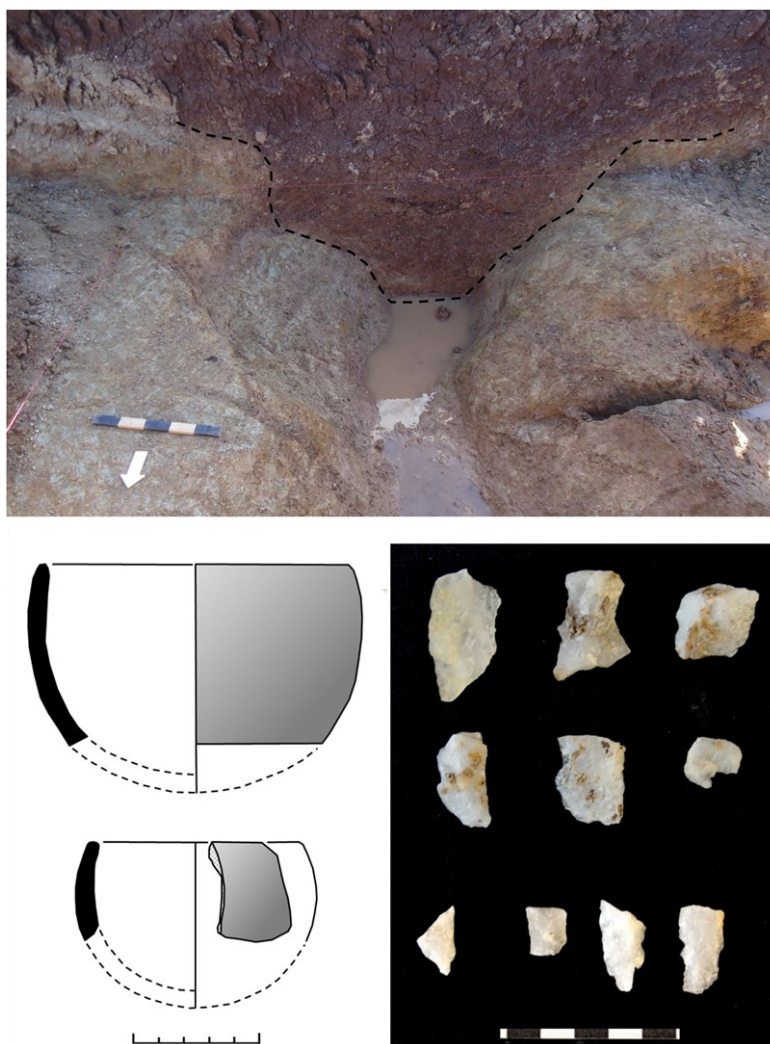


Fig. 5. Ditch and archaeological materials from Horta do Pinheiro 6.

Fig. 5. Fosso e material arqueológico da Horta do Pinheiro 6.

**Table 1.** Archaeological materials from Horta do Pinheiro 6 ditch.

**Tabela 1.** Materiais arqueológicos do fosso da Horta do Pinheiro 6.

Artefact categories	[105]	[103]	Total
Quartz hammer stone		1	1
Unclassified quartz fragment	1	3	4
Quartz knapping residue		2	2
Quartz flakes		2	2
Quartz bladlets		3	3
Quartz geometric		1	1
Quartz irregular core		1	1
Granitic spheroid	1		1
Unclassified pottery fragment	5	13	18
Rim of spherical pot		6	6
Rim of bowl		1	1

**Table 2.** Species list.

**Tabela 2.** Lista de espécies

Species	Nº	MNI
<i>Equus</i> sp.	5	1
<i>Cervus elaphus</i>	7	2
<i>Bos</i> sp.	1	1
<i>Sus</i> sp.	2	2
<i>Oryctolagus cuniculus</i>	1	1
Unidentified mammals	9	
Large size mammals	9	
Midle size mammals	7	
Total	57	7

**Table 3.** Anatomical representation.

**Tabela 3.** Representações anatómicas.

	<i>Equus</i> sp.	<i>Cervus elaphus</i>	<i>Bos</i> sp.	<i>Sus</i> sp.	<i>O. cuniculus</i>	MSM	LSM	Total
Deciduous incisif				1				1
Right mandible					1			1
Vertebrae						1		1
Ribs						3	3	6
Right ulnae	1	1						2
Left ulnae			1					1
Unidentified innominate						1		1
Right femur	1							1
Right tibia	1	1						2
Unidentified fibula				1				1
Right malleolus boné		1						1
Right astragalus		1						1
Left astragalus	1	1						2
Left calcaneus		2						2
Unidentified metapodium	1							1
Unidentified shaft						4	4	8
Total	5	7	1	2	1	9	7	32

The lithic materials are exclusively of quartz (with the exception of a granitic spheroid) revealing a production of flakes, irregular bladlets and a geometric. The pottery is scarce and only seven rims were recorded, with predominance of spherical morphologies (Fig. 5).

The faunal assemblage is composed by fifty-six bones and one tooth belonging to mammals like equids, red deer, suids and rabbit. Equid remains are composed of five bones from one individual; red deer are present with seven bones from two adults; suids are represented by one bone and one decidual incisive from two individuals, one adult and one juvenile; bovid is represented by one ulna;

and rabbit, at last, with one fragment of a mandible. The other bones are unidentifiable fragments of ribs and long bones from middle and large size mammals (Table 2). There are also fragments from a *Ruditapes decussata* shell and one small fragment of an unidentified bivalve.

Taphonomical analysis showed the saturation of calcium carbonates in all bones, mostly in more than a half of the bone surface. These concretions allowed that the red deer tibia, astragalus and malleolus bone from right side maintained the original anatomical connection. The only anthropic manipulation is fire staining in six bones, five of them with a uniform black color compatible with car-

bonization, pointing to an exposure to temperatures between 250° C and 500° C (COSTA 2015). The other one is slightly burned.

As the other archaeological assemblages, the faunal remains are very few and constitute an insufficient faunal sample that rather limits the comparison between sites and the composition of an interpretative framework in a regional level. Nevertheless, the identification of this kind of Neolithic assemblages is relevant for the extension of data about the use of mammals in this period. In fact, it is interesting to point out in this assemblage the presence of a wild spectre with equids and red deer in a significant proportion, a tendency

that we also registered in the Late Neolithic ditch at Monte da Contenda (VALERA *et al.* 2014b). However, in ditched enclosures of this period where the faunal assemblages are more numerous than Horta do Pinheiro, domestic caprids, bovinds and suids are much more important than equids and red deer, like in the Late Neolithic contexts of Perdigões (CABAÇO 2010; COSTA 2013), Ponte da Azambuja 2 (NABAIS & RODRIGUES 2016), Igreja de São Jorge in Ficalho

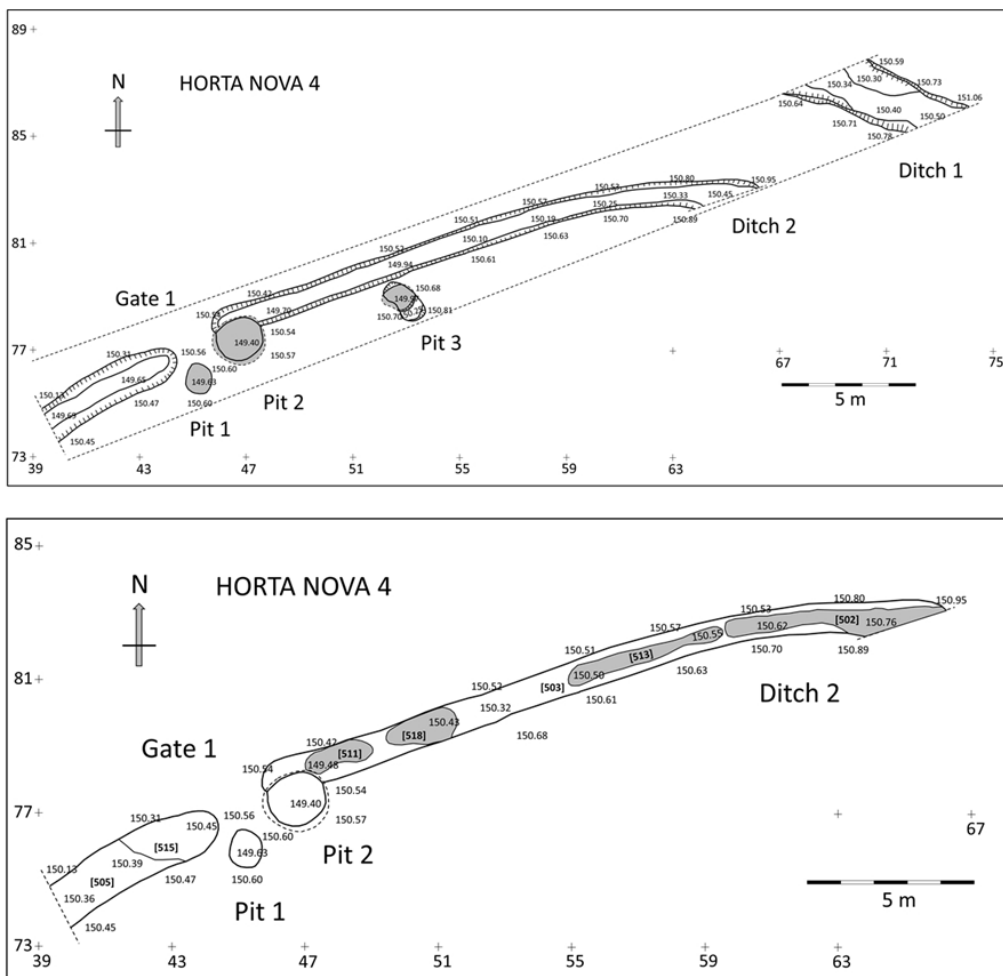
(CARDOSO 1994) and Porto Torrão (CORREIA *et al.* 2016). Bias or some specific behaviour, is something that future research should account for.

A metapodium of an equid from the top layer [103], corresponding to the re-cutting, was dated by radiocarbon, providing a date from the transitions between the 4<sup>th</sup> and the 3<sup>rd</sup> millennium BC (see point 3.1), matching the later absolute chronologies available for the Late Neolithic contexts of the ditched enclosures of Perdigões, Moreiros 2 and Porto Torrão (VALERA, 2013b; 2013c).

### 2.3. Horta Nova 4

The enclosure of Horta Nova 4 is located 16km Southeast of Horta do Pinheiro 6, to the West of Alvito village. It is located in the top of a smooth hill between two streams that are part of the Ribeira de Odivelas basin, a tributary of the Eastern Sado basin. The area is composed by weathered gabros and diorites of the Hercynian Zone of Ossa Morena.

A pipeline trench revealed two ditches, one (ditch 1) almost perpendicular to the trench and the



**Figure 6.** Horta Nova 4: final plan of the two ditches and plan of the sections of recuttings in Ditch 2.  
**Figura 6.** Horta Nova 4: plano final dos dois fossos e plano das secções de recortes.

Ditch 2, excavated in a longer extension, showed the presence of a gate with 1,8 m wide, generally oriented NW. The ditch, with a “U” profile with 1 m wide and 0,50/0,70 m deep, presented a different stratigraphy in both sides of the gate. To the north of the gate, the stratigraphy has revealed a sequence of three moments. The first corresponds to the initial infilling of the ditch. In the area close to the gate there was a clayish dark-brown layer with carbonate nodules and few pottery fragments, overlaid by a sequence of deposits along the excavated section characterized by clayish sediments with carbonated nodules. These deposits, that provided some pottery fragments, filled the ditch up to the top. Then, in a second moment, a sequence of short depth discontinuous recuttings was done over the previous infilling (Figs. 6, 7 and 8). These recuttings were filled with clayish sediments and agglomerations of small stones among which some pottery fragments and lithic materials were recovered. Finally, in a third moment, a thin clayish layer covered the top of the ditch. To the South of the gate, the ditch was filled with three deposits. At

the bottom, there was a sandy layer with carbonate nodules and some pottery fragments overlaid by a clayish dark-brown deposit also with some pottery fragments and lithic materials; near the gate grit sediments covered this unit also with some lithic materials.

Inside Ditch 2, three negative structures were identified. A small pit (Pit 1) in front of the gate was not excavated (it was not affected by the pipeline). Another large pit (Pit 2), with 1,60m diameter and 1,50m deep, was cutting the northern extremity of Ditch 2, in the gate. It was filled only with one deposit, providing pottery fragments that are ascribed to the Chalcolithic. Finally, near the limits of north section of Ditch 2, there was a pit (Pit 3) with a step showing a morphology like some Bronze Age hypogea known in the region. However, no human remains were recorded inside and the collected materials, a large clay crescent and some fragments of spherical and hemispherical bowls, may correspond to the same chronologies of the other excavated features.

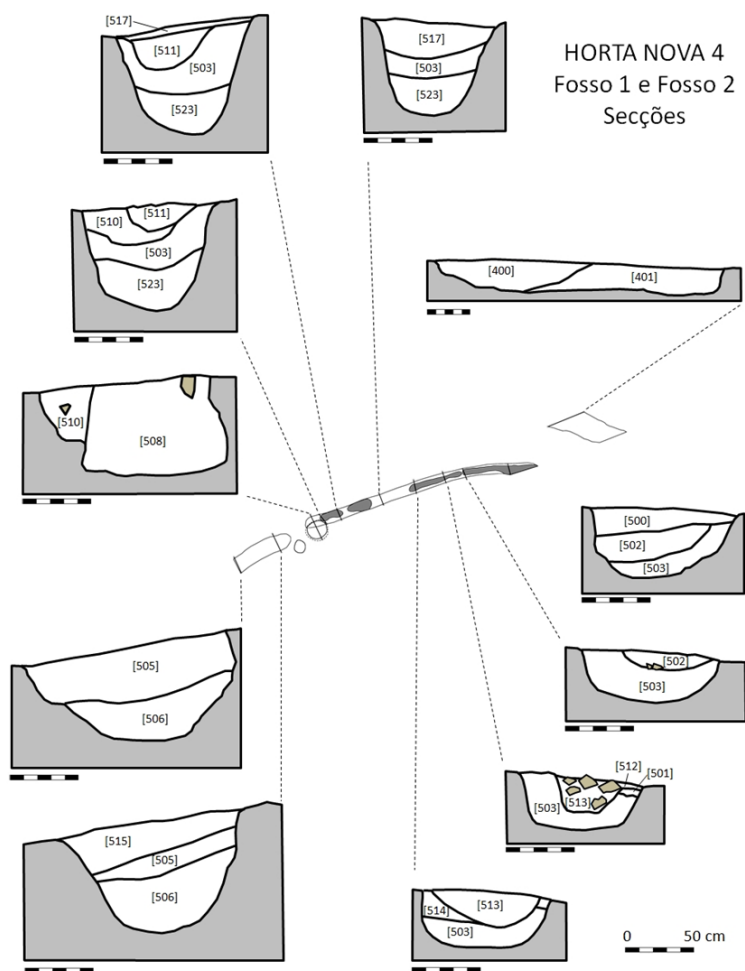


Figure 7. Section in Horta Nova 4 ditches.  
 Figura 7. Secções nos fossos de Horta Nova 4.



**Figure 8.** Horta Nova 4. A: ditch 2 after excavation; B: ditch 1 after excavation ; C and D: recutting in ditch 2.  
**Figura 8.** Horta Nova 4. A: fosso 2 escavado; B: fosso 1 escavado; C e D: secções reescavadas no fosso 2.

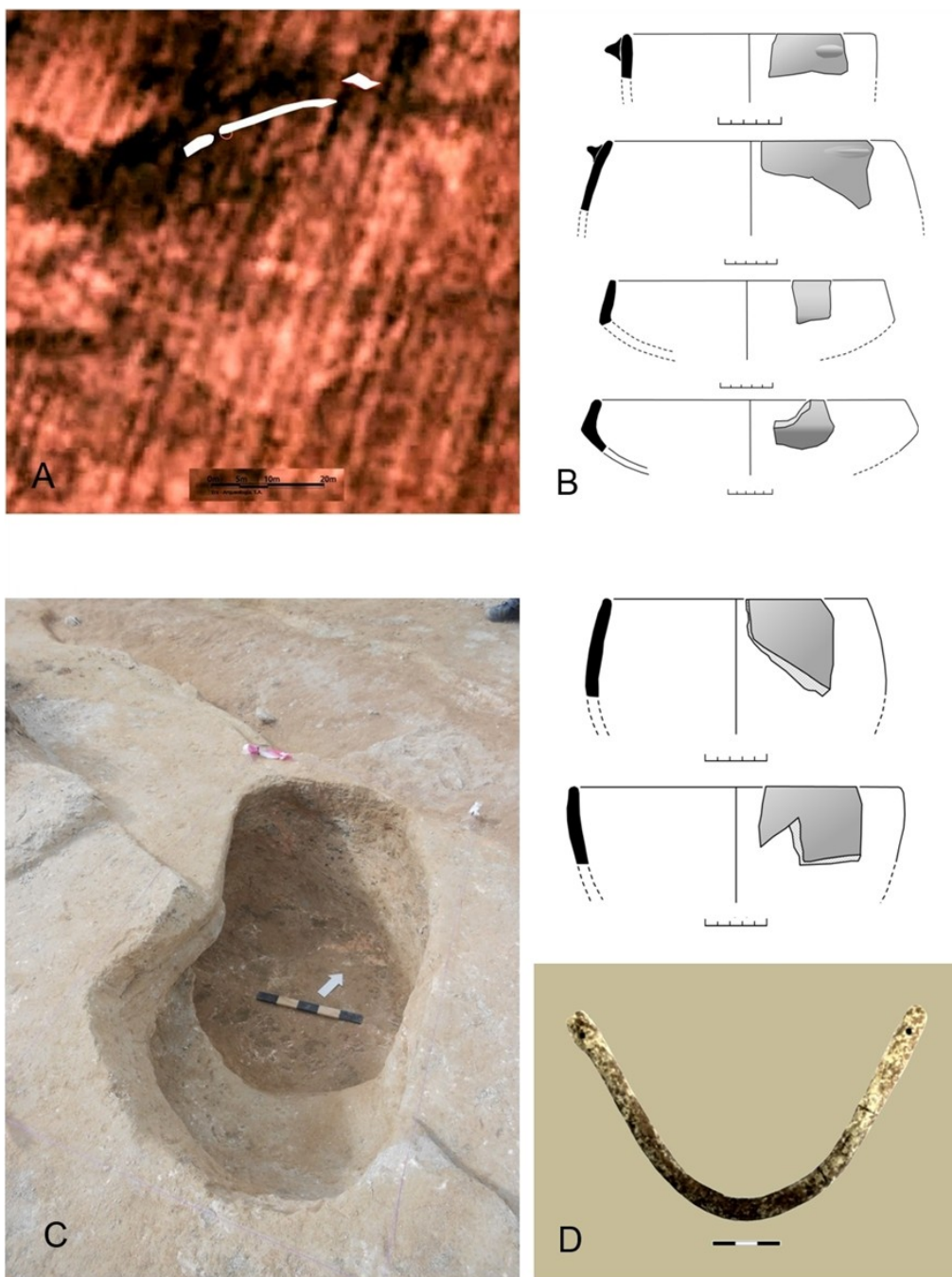
**Table 4.** Archaeological materials from Horta Nova 4.

**Tabela 4.** Materiais arqueológicos de Horta Nova 4.

Artefact categories	Ditch 2 Sth	Ditch 2 Nth Phase 1	Ditch 2 Nth Phase 2	Pit 2	Pit 3
Pottery unclassified shards	15	4	9	9	7
Pottery rims	3	1	1	2	2
Large clay crescent					1
Quartz core for flakes	1				1
Blade segment in flint	1				
Flake in quartz	1				
Pebble	1				
Fragment of quartz	1				
Fragment of chert	1				

The materials from Ditch 2 correspond to pottery shards and lithics mainly of quartz. The few rims correspond to carinated bowls and pots with grips typical of the regional Late Neolithic (Figure 9). On the contrary, the two rims from Pit 2, a pit that cuts Ditch 2, correspond to thickened rim plates representative of the regional Chalcolithic. Based on these materials and stratigraphic relation between features, we can consider the overture and re-cutting of Ditch 2 to be dated from the Late

Neolithic. In addition, the data points to a later occupation dated to Chalcolithic, responsible for the excavation and filling of Pit 2. However, the display of the excavated structures over a satellite image from Google Earth suggests the existence of several ditches with a concentric tendency (Fig. 9A). Based on the image the larger diameters of the enclosures defined by ditched 1 and 2 would be approximately of 60m and 50m.



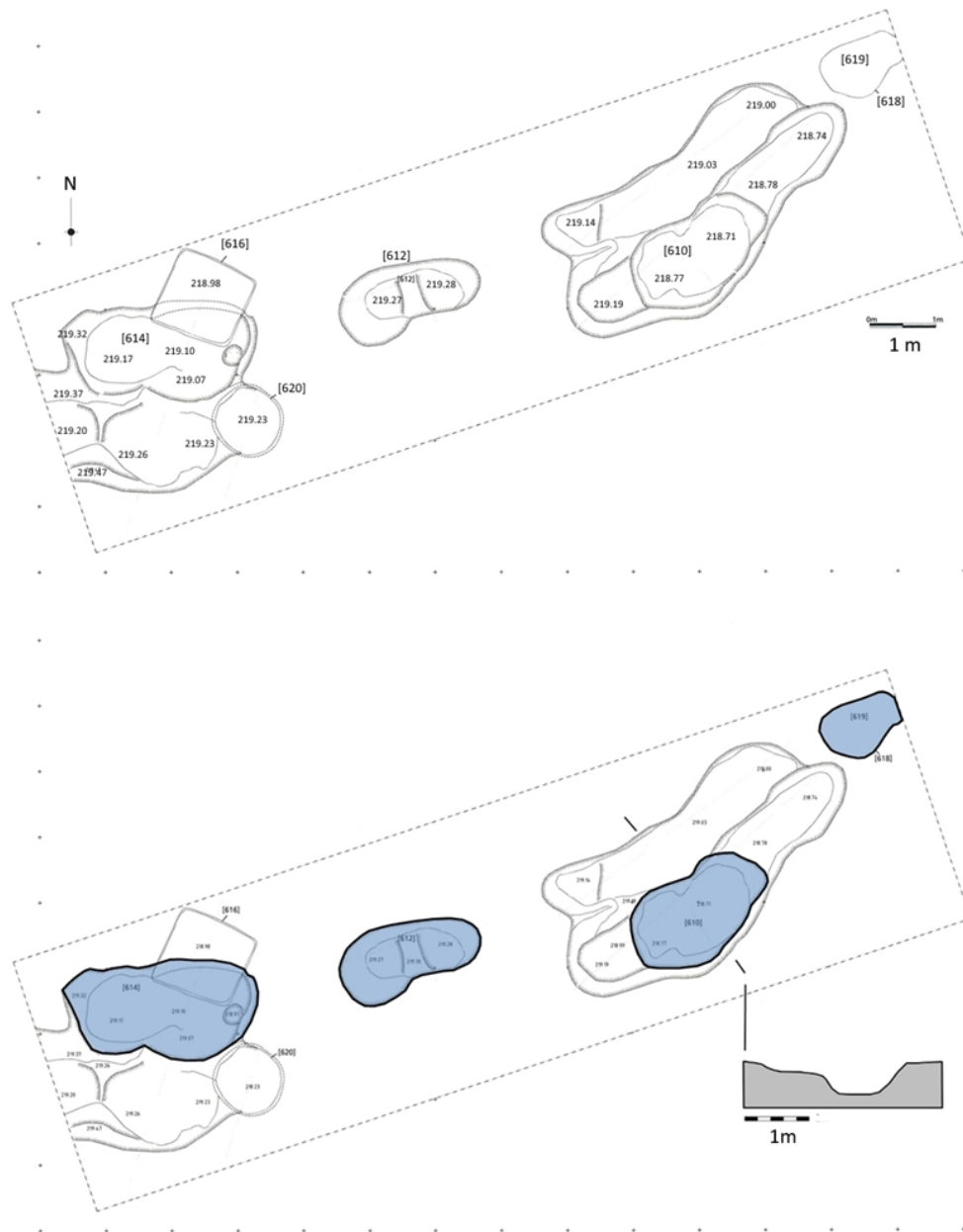
**Figure 9.** Horta Nova 4. A: location of the excavated ditches in aerial image; B: pottery from ditch 2; C: Pit 3; D: large loom weight.

**Figura 9.** Horta Nova 4. A: localização dos fossos escavados em imagem aérea; B: cerâmica do fosso 2; C: fossa 3; D: grande peso de tear.

## 2.4. Quinta do Estácio 6

Quinta do Estácio 6 is in the parish of N<sup>a</sup> S<sup>a</sup> das Neves, municipality and district of Beja. The site spreads over the plain top of a smooth elevation and over its northern slope, with a heterogeneous geology of gabbros and diorites, calcite blocks and nodules of clay and carbonated material. The excavation of a large area revealed occupations from Late Neolithic, Chalcolithic, Bronze Age, Iron Age and Late Classic Period. The structures matching to the Late Neolithic are a hypogeum and the sequence of aligned elongated pits that is described here.

This alignment is placed in the middle of the northern slope, crossing the pipeline trench (Figs. 10, 11). The sequence shows at least two phases of construction. The first one is characterized by the longer pits with an average depth of 0,40m. The western one goes outside the excavated area, while the eastern one is 5m long. It is possible that this first phase could correspond to two distinct construction moments, since the eastern elongated pit seems to present two stages of excavation: the later pits were slightly deeper and excavated in the southern border of the previous.



**Figure 10.** Plan of the two phases of the overlapped sequence of elongated pits in Estácio 6 (the later ones highlighted below).

**Figura 10.** Plano das duas fases sobrepostas de fossas alongadas em Estácio 6 (assinaladas em baixo as mais tardias).



Fig. 11. Estácio 6 alignment of elongated pits.

Fig. 11. Alinhamento de fossas alongadas de Estácio 6.

In the first alignment, the pits are located five meters apart, precisely the width of the elongated pits, suggesting a regularity of the spacing of this alignment. In the second phase four smaller pits were constructed (Fig. 10, marked in blue), two of them cutting the previous elongated features and going deeper (the west limit of the eastern pits was later cut by a square pit of a modern tree and by a circular prehistoric pit). These four pits also seem to present a regular spacing between them and define a curvature, which is also suggested by the elongated pits of the first phase. The infilling deposits of these several structures were difficult to distinguish, but the limits of the features in the geological is quite clear.

Both alignments suggest the existence of a causewayed section, rare in Iberia, but recently identified in Northern Meseta and Valencia (DELIBES DE CASTRO *et al.* 2014; BERNABEU AUBÁN, 2012). Segmented sequences of ditches dating to the Neolithic were also recorded in Fareleira 3 (FIGUEIREDO, 2013).

The archaeological materials recovered inside these features are scarce, only some pottery fragments of simple hemi-spherical shapes and rectangular loom weight plaques were collected and can be ascribed to a Late Neolithic chronology.

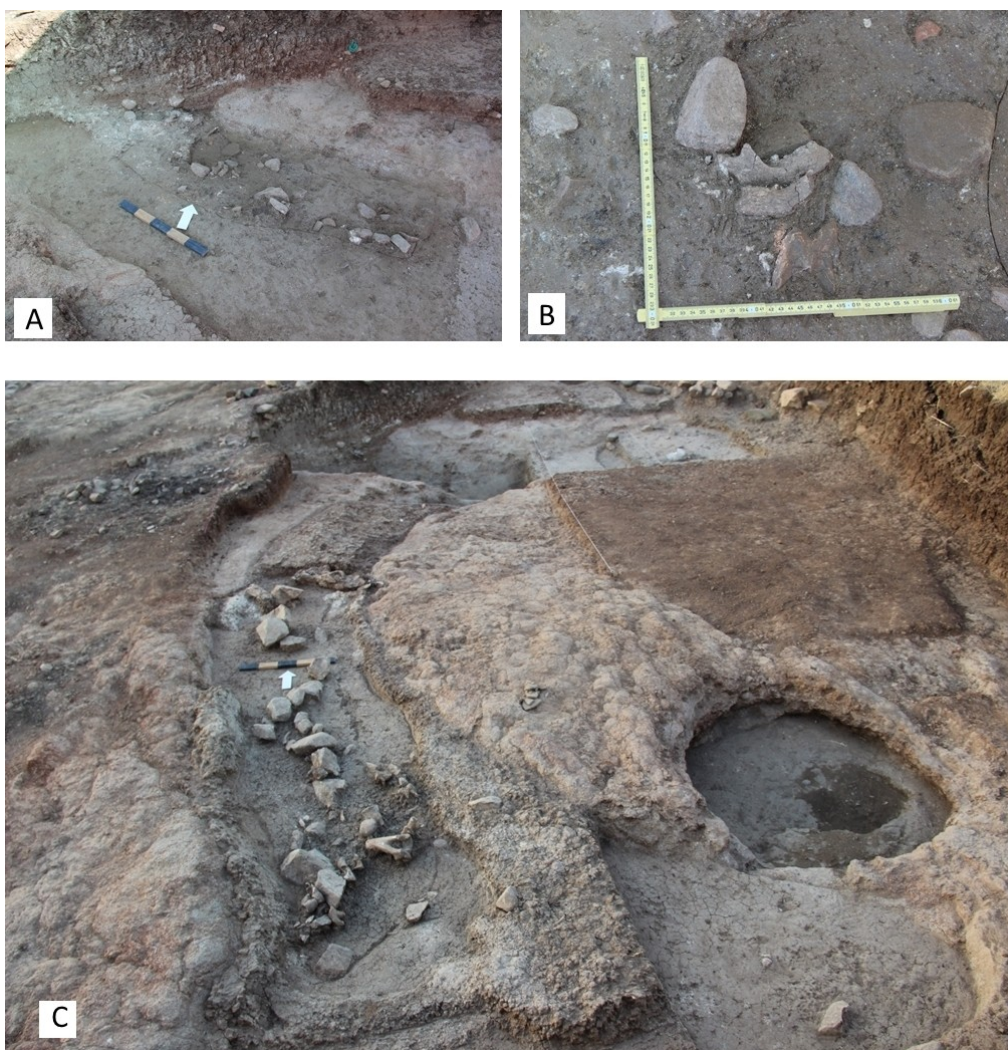
## 2.5. Perdigões

Perdigões is a well-known site, with a long research program and available bibliography (see <http://perdresearch.blogspot.pt/p/teste-1.html>). The site has an extended chronology of human occupation, spanning from the late Middle Neolithic to the end of the Chalcolithic / transition to the Bronze Age (VALERA *et al.* 2014c). Four ditches are already dated to the Late Neolithic (Table 5): ditches 5, 6, 8 and 12 in the central area of Perdigões. This concentration of Neolithic ditches in the central area of the enclosures, suggested that the site was smaller in the Neolithic and grew during the Chalcolithic, reaching its biggest dimensions defined by Ditch 1, dated from the second half of the 3<sup>rd</sup> millennium BC.

Nevertheless, the last fieldwork done in 2015 and 2016 revealed a different panorama. Firstly, the survey undertaken in Ditch 11, a ditch that is partially running outside Ditch 1 (in the NW part of the site) and seems to be overlapped by it in the NE area, was also dated to Late Neolithic (ICA-15B/1019). This proves that the enclosure was already big in the late 4<sup>th</sup> millennium BC, with an area of around 12/14ha. This area is almost as large as the area the site presented in the 3<sup>rd</sup> millennium BC (around 16ha). Secondly, the excavations carried out in the central area revealed another small ditch (Ditch 13), with complex planimetry not showed in the geophysics, and several pits dating to the middle of the 4<sup>th</sup> millennium BC. Late Neolithic ditches cut part of the identified segments, stressing that so far this is the oldest enclosure of Perdigões. Radiocarbon ages of two pits and material culture (simple pottery shapes based in hemi-spherical and globular bowls, absence of carinated bowls and of decoration, lithics like quartz flakes, bladelets and some microliths, along with a total absence of loom waifs) points to a period that can be considered as the final moments of the Middle Neolithic. Re-cuttings or segmented sections were identified in this ditch along with structured depositions, inclusively with human remains (Fig. 12). The characterization of this early occupation of Perdigões will carry on in the next campaigns of excavation.

**Table 5.** Radiocarbon dates for the Neolithic sites with ditches in Portugal.  
**Tabela 5.** Datas de radiocarbono para sítios neolíticos com fossos em Portugal

Site	Sample	Feature	Lab Ref.	Date BP	Cal 2σ	Bib. References
Senhora da Alegria	Charcoal	Fireplace	Beta-339602	6380±30	5470-5310	Valera, 2013a
Senhora da Alegria	Charcoal	Fireplace	Beta-339601	4730±40	3640-3370	Valera, 2013a
Perdigões	Sus sp.	Pit 65	DeA-8207	4577±28	3496-3118	Unpublished
Perdigões	Sus sp.	Pit 48	ICA-15T/1016	4680±30	3620-3370	Unpublished
Perdigões	Sus sp.	Ditch 13	DeA-8206	4518±28	3354-3102	Unpublished
Perdigões	Bos primig.	Ditch 13	ICA-15B/1252	4310±30	3010-2890	Unpublished
Perdigões	Fauna Bone	Ditch 13	ICA-17B/0101	4410±30	3310-2920	Unpublished
Perdigões	Bos sp.	Ditch 13	Ica-17B/0103	4370±30	3090-2910	Unpublished
Perdigões	Ovicaprid	Pit 82	ICA-17B/0102	4460±30	3340-3020	Unpublished
Perdigões	Bos sp.	Ditch 11	ICA-15B/1019	4470±30	3340-3030	Unpublished
Perdigões	Fauna Bone	Ditch 12	Beta-330092	4530±40	3360-3090	Valera <i>et al.</i> 2014c
Perdigões	Ovicaprid	Trench 1	Beta-304756	4470±30	3340-3020	Valera <i>et al.</i> 2014c
Perdigões	Fauna Bone	Ditch 6	Beta-315242	4450±30	3330-3020	Valera <i>et al.</i> 2014c
Perdigões	Ovicaprid	Hypog. 1	ICA-15T/1021	4530±30	3360-3100	Unpublished
Perdigões	Fauna Bone	Ditch 6	Beta-318359	4390±30	3090-2910	Valera <i>et al.</i> 2014c
Perdigões	Ovicaprid	Ditch 5	Beta-350352	4390±30	3090-2910	Valera <i>et al.</i> 2014c
Perdigões	Sus scrofa	Hypog. 1	Beta-304757	4390±30	3090-2910	Valera <i>et al.</i> 2014c
Perdigões	Cervus ela.	Ditch 8	ICA-16B/0921	4310±30	3010-2890	Unpublished
Perdigões	Sus sp.	Ditch 8	ICA-16B/0922	4330±30	3020-2890	Unpublished
Perdigões	Human	Pit 7	Beta-289265	4430±40	3330-2920	Valera <i>et al.</i> 2013
Perdigões	Human	Pit 11	Beta-289263	4370±40	3090-2900	Valera <i>et al.</i> 2013
Juromenha 1	Bone	Ditch	Wk18487	4538±32	3370-3100	Mataloto, Boaventura, 2009
Juromenha 1	Fauna Bone	Ditch	Wk18488	4547±35	3370-3100	Mataloto, Boaventura, 2009
Juromenha 1	Fauna Bone	Ditch	Beta-169263	4540±100	3340-2930	Mataloto, Boaventura, 2009
Juromenha 1	Fauna Bone	Ditch	Beta-169264	4550±40	3520-2920	Mataloto, Boaventura, 2009
S. Jorge de Ficalho	Fauna Bone	Ditch	OxA-5443	4540±60	3500-3020	Soares, 1996
Moreiros 2	Fauna Bone	Ditch	Beta-350350	4410±30	3260-2920	Valera <i>et al.</i> 2014c
Moreiros 2	Fauna Bone	Ditch	Beta-350351	4350±30	3080-2900	Valera <i>et al.</i> 2014c
Horta do Pinheiro 6	Equid	Ditch	ICA15B/1022	4370±30	3090-2910	Unpublished
Monte da Contenda	Fauna Bone	Ditch	Wk-38618	4464±29	3336-3024	Valera <i>et al.</i> 2014b
Monte da Contenda	Fauna Bone	Ditch	Wk-38619	4478±29	3340-3030	Valera <i>et al.</i> 2014b
Porto Torrão	Fauna Bone	Ditch 1	Sac-2232	4390±50	3325-2901	Valera, 2013



**Fig. 12.** Perdigões ditch 13. A: deposition in the center of the section 13C1; B: details of human mandible; C: two different section of ditch 13C2.

**Fig. 12.** Fosso 13 dos Perdigões. A: deposição ao centro do troço 13C1; B: detalhe da mandíbula humana; C: duas secções distintas no troço 13C2.

### 3. DISCUSSION

The four new sites with ditches presented in this paper can be attributed to the Neolithic. They provide new perspectives on the distribution and density of enclosures in the Alentejo region during Neolithic, even with the incomplete information obtained with the limited approaches developed by preventive archaeology nowadays. These data together with new information recently collected at Perdigões ditched enclosures, encourage the discussion of some ideas regarding the emergence and the diversity of these architectures during the 4<sup>th</sup> millennium BC.

#### 3.1. Matters of chronology

Absolute dating obtained for Perdigões and Horta do Pinheiro 6 not just enlarge the available absolute chronology for the Late Neolithic enclosures of Alentejo, but also allow receding the

emergence of these architectures in the region. According to the available data it was around 3450/3400 BC, that ditched enclosing structures started to be built in continuity in western Iberia and in Alentejo hinterland. At Senhora da Alegria (Coimbra, Central Portugal), after a first small ditch dated from Early Neolithic (5500-5300BC), several small ditches are present in a phase of occupation dated between 3450-3400 BC (Fig. 13). In Central Alentejo, the first occupation of Perdigões is now dated from the same time. According to the actual data, the middle 4<sup>th</sup> millennium BC seems to be the moment of initial dissemination of ditched enclosures construction in the region and between 3350-2900BC the number seems to increase (at the present, there are 17 ditched enclosures known for the Neolithic at inner Alentejo). Nevertheless, a possible earlier emergence cannot be ruled out. The enclosures dated after 2900BC correspond already to Chalcolithic contexts.



**Fig. 13.** Model of radiocarbon dates for the Neolithic sites with ditches in Portugal.  
**Fig. 13.** Datas de radiocarbono modeladas para sítios neolíticos com fossos em Portugal.

### **3.2. Expanding to west and increasing in numbers**

The Alentejo hinterland presents the major concentration of ditched enclosures of Portugal and one of the largest in Iberia (VALERA 2013a). That was already visible, for the Late Neolithic, in the Guadiana basin, where 13 sites were known previously to this work (Fig 1). The recording of Cortes 1 and Estácio 6 contributes to reinforce this presence along the Guadiana river. On the other hand, the identification of Horta Nova 4 and Horta do Pinheiro 6 shows an extension to the west, to the right bank of the river Sado basin, where only the ditch two of Porto Torrão was known as corresponding to this period (VALERA & FILIPE 2004; VALERA 2013c). This suggests a wider distribution and means that the actual number and spatiality knowledge of the Neolithic enclosures in Alentejo reflects more the present circumstances of research than a historical reality.

In fact, the number of Neolithic ditched enclosures founded have been increasing in Portugal and the 20 recorded so far corresponds to 42% of the ditched enclosures with chronological attribution known in the country. The number, though, will probably be higher, since many have not a clear chronological attribution and many of the Chalcolithic ones may have previous Neolithic ditches not yet identified.

The masking of the previous occupations by intense posterior ones is well demonstrated at Perdigões and in Monte da Contenda (VALERA *et al.* 2014b). In the later, one ditch was dated from Late Neolithic and the geophysics showed that there are other ditches cut by that one, while at the surface almost only Chalcolithic materials were recovered. Another example is the large enclosure of Salvada (VALERA & PEREIRO 2015), where amongst a large amount of Chalcolithic material there are some pottery fragments suggesting the existence of a Neolithic occupation (because the presence of Neolithic ditches is not yet demonstrated, this site was not counted here as a Neolithic enclosure). So, based on the available evidences, the idea that there is a significant increase of ditched enclosures during the Chalcolithic in the region, if possible, is not yet clearly demonstrated, especially if we take into consideration that most of the Chalcolithic ditched enclosures must be distributed along the 3<sup>rd</sup> millennium BC. More dated contexts are needed to achieve a correct evaluation of the dynamics of construction of this type of sites.

### **3.3. Building by segments**

It is interesting to note that many of the architectural characteristics that can be observed in ditched enclosures during the 3<sup>rd</sup> millennium BC are already present in the Late Neolithic ones and perhaps earlier (as the recent date obtained for

Perdigões seems to suggest). This indicates a tradition in continuity: general tendency for circularity and concentricity, a diversity of sizes, complexity and temporalities of the construction and filling of ditches by segments, the structured deposition of selected materials inside the ditches are some of the long-term characteristics of these architectures.

The construction by segments, although still not frequent in many Iberian regions, it is progressively being recorded in more sites. Several causewayed designs have been identified in Spain in the Northern Meseta, at the sites of Cuesta del Pájaro, El Campillo, Las Canteras, La Cuesta-Los Villares, El Moscatel, El Cesto III, La Corona, Los Melonares-Zofraga or Santa Cruz (DELIBES DE CASTRO *et al.* 2014) and in Valencia, at the Arenal de la Costa (BERNABEU AUBÁN *et al.* 2012). In Portugal, a construction through overlapping segments was observed in the Chalcolithic sites of Salgada (CALADO, 2006), in the external ring of Xancra (in this case suggested by geophysics – VALERA & BECKER, 2011), at Barranco da Farinheira (GONÇALVES & SOUSA 2014) and in the external ring of Bela Vista 5, the later dated from the last quarter of the 3<sup>rd</sup> millennium BC (VALERA, 2014). For the Late Neolithic, it was recognized at the Fareleira 3 (FIGUEIREDO, 2013), where the segments don't seem to be overlapped, and now in Estácio 6, where two moments of construction of a causewayed section were detected. At Perdigões, ditch 13 shows several segments that might correspond to segments or to re-cuttings (Fig. 12). This procedure of building by segments (spaced or overlapped), therefore, exists in the southern Portugal since, at least, the second half of the 4<sup>th</sup> millennium BC and reaches the end of the 3<sup>rd</sup> millennium BC. This emphasizes the diversity of the enclosing architectures during this time span and the presence of long-term specific practices, which continue to be deliberately ignored in strict functionalist and materialistic approaches to enclosures phenomena.

### **3.4. Cutting and recutting**

Another long-term practice is the re-cutting of previous ditch infillings. It corresponds to the re-excavation of parts of ditches that are already filled. Usually, the re-excavation does not totally remove the previous sedimentation in all its depth, width, and length, being done in sections, allowing its identification in the stratigraphic sequence. This cannot be mistaken with processes of cleaning or total reopening of ditches. In the Chalcolithic, this practice was identified in ditches 1, 7 and 10 of Perdigões, in Bela Vista 5 (VALERA 2014) or in Cabeço do Pé da Erra (GONÇALVES & SOUSA 2014). It is also present in the Late Neolithic ditch 11 of Perdigões and now in Horta do Pinheiro 6 and in Horta Nova 4. The last presents thin and elongated sections excavated in the previous infill-

ing deposits and infilled with the depositions of small stones and some fragments of pottery (Figure 8). This was also recorded in ditch 13 at Perdigões (Fig. 12). In this last case, amongst the stones, pottery shards and faunal remains, there was a human mandible intentionally broken (by flexing) and deposited with the two fragments overlapping but with opposite directions, showing an intentional and structured action of deposition (Fig. 12: B). The presence of human remains in this kind of depositions inside ditches is also another long-term practice (MÁRQUEZ ROMERO 2004; VALERA & GODINHO 2010) that is now recognized for the Neolithic.

Again, this emphasizes the complexity that ditch biographies may assume, where anthropic and natural procedures of filling, re-excavation, re-filling and structured depositions may be combined in different ways and in different sections of the ditch. This, demonstrates that the filling processes can hardly be reduced to the erosive explanation and that the information from one section cannot easily be extended to the whole ditch.

### 3.5. Processes of filling

In fact, the available data shows that the processes of ditch filling are quite diverse in the Neolithic.

The geochemical study of the infilling sediment of the two sections excavated in Cortes 1 show a colluvial origin (SANTOS 2015) and the absence of archaeological materials in those sediments indicates that there were no occupational remains inside this small enclosure to be eroded and deposited inside the ditch. An erosive natural process almost without archaeological materials was also identified in part of the lower fillings of Late Neolithic ditch 5 of Perdigões.

For the majority of cases, though, there are complex sequences of infillings, accumulating abundant archaeological material that alternate with short events of natural origin, as it was documented in Monte da Contenda (VALERA *et al.* 2014b) and in the Late Neolithic ditches 6 and 11 of Perdigões, or what was described as sequences of abundant accumulations of archaeological materials inside ditches, like in Torrão (LAGO & ALBERGARIA, 2001), S. Jorge de Ficalho (SOARES, 1996), Ponte da Azambuja (RODRIGUES, 2008) or Paraíso (MATALOTO & COSTEIRA, 2008). It is also recorded the presence of infilling sequences characterized by intentional and horizontal structured depositions of specific materials (mainly small stones, pottery shards and faunal remains), as it was recognized in ditches 8, 12 and 13 of Perdigões or in Juromenha 1 (R. MATALOTO, personal information).

Maybe except for Cortes 1 (a small enclosure with two opposite sections excavated and presenting similar processes of infilling), it is not very

clear yet what does this diversity represents. In fact, for most of these contexts only small sections were surveyed and excavations of long sections of ditches are still scarce. However, at Perdigões the excavation of the ditches 5 and 12 in two sectors (36m apart) revealed different dimensions, different profiles, and different processes of filling. Ditch 13 presents sequences of segments with completely different infillings, showing again, that the generalization of a punctual observation in a ditch is problematic (the same was already shown in for the late 3<sup>rd</sup> millennium BC in Bela Vista 5 - VALERA 2014).

Nevertheless, these diversified processes reveal that different dynamics and combinations in ditch filling were occurring already in the Neolithic ditches, generating a plurality of complex biographies that cannot be reduced to a unique hegemonic process, nor to a simple dichotomy between anthropic / natural and meaningful / worthless.

### 3.6. Diversity of enclosures in the 4<sup>th</sup> millennium BC in South Portugal

What the actual data seems to suggest is that ditched enclosures in Alentejo are characterized by diversity and that variability was already there in the 4<sup>th</sup> millennium BC, despite observing to some general common principles.

Diversity in ditch sizes, spanning 1 meter wide by less than a meter deep to more than 3 meters wide and 3 meters deep), and in the total area of the enclosures, from 0,2 ha at Moreiros 2 to more than 10h at Perdigões ditch 11. Although there is a general tendency for circularity and concentricity, there is a variability in the complexity of the plans. Some ditches are linear, as in Torrão, Horta Nova 4 or Perdigões, others are sinuous and/or segmented (Perdigões, Águas Frias, Moreiros 2, Fareleira 3, Juromenha 1, Estácio 6). It is also possible that some ditches do not define complete enclosures, living wide overtures, like the Middle Neolithic ditches at Senhora da Alegria (Coimbra), in some sites of Valencia (FLORES 2009) or Italy (CAVULLI 2010; CAVULLI & PEDROTTI 2003). Sometimes there is just one ditch (Torrão, Cortes 1, Horta do Pinheiro 6), in other cases there are several (Perdigões, Moreiros 2, Águas Frias), what might be related to diversified biographies and temporalities, with different densities of archaeological materials and other structures like pits. The filling processes and the associated social practices also vary, sometimes even in the same site and in the same structure (as it happens in Perdigões). Regarding funerary practices and human bone manipulations, they may be absent, present inside the enclosures (Perdigões) or in the proximity (Torrão, Moreiros 2). Variability characterizes even topographical locations: a natural theatre at Perdigões, slopes at Monte da Contenda or Paraíso, smooth elevation at Cortes 1, Horta Nova 4 and Moreiros

2, more pronounced elevation at Torrão, large and smooth valleys at Porto Torrão, Horta do Pinheiro 6, Águas Frias or Juromenha 1. If ditched enclosures may be related to the same general social needs, they do so in particular ways that should not let be erased by the global picture.

### *3.7. Ditched and megalithic enclosures: questioning the emergence of enclosures in South Portugal*

It is becoming clear that the emergence of ditched enclosures, in South Portugal, is related to the development of a need for monumental forms of expression that characterizes the social trajectory of the Neolithic way of being in the world.

The rise of those Neolithic monumental forms of expression in the region is an actual point of debate. The traditional models of the emergence of the Neolithic have been criticized for paying less attention to the symbolic and ideological side of the process (VALERA 2003; CALADO 2004). For the Alentejo region, the traditional late chronology for the first monuments has been questioned and it was proposed that the first menhirs and cromlechs could go back to the Early Neolithic (at least to the 5<sup>th</sup> millennium BC) as part of the process of colonization of the hinterland, where these first megalithic monuments would be socially active in a context of the occupation and control of new territories (CALADO 2004, 2015). It could be argued that they were part of a “territorial project” (BENEVOLO & ALBRECHT 2003) that would change the landscape in systematic none accidental ways.

Naturally, and mainly due to the difficulties of dating these type of monuments, this proposal is debatable. Credible absolute dates for standing stones (based on well-contextualized “short living” materials) are missing and the proposed associations between menhirs and cromlechs and Early Neolithic material assemblages are not unquestionable. However, certain evidences seem to support an early emergence of megalithic monumentality. That is the case of the reused stelae and menhirs in early megalithic funerary monuments, as it happens in Britany (CASSEN *et al.* 2000), but also in central and South Iberia (RAMÍREZ, *et al.* 2007; RAMÍREZ *et al.* 2013) and in Alentejo, like the small menhirs reused in the early funerary megalithic monuments of Torrão (LAGO & ALBERGARIA 2001), Monte da Cabeça (LEISNER & LEISNER 1959) or Pedra Escorregadia (GOMES 1994) in Algarve. Small menhirs were also reported in some habitat areas dated from the Early Neolithic in the region, such as Caramujeira in Algarve (GOMES 1997), Vale Pincel 1 (TAVARES DA SILVA, personal communication) or Malhada da Ourada (FERREIRA *et al.* 2009). This data cannot be ignored and strongly suggests that the first none funerary megalithic monumentality may go back (in a conservative perspective) as far as the late 5<sup>th</sup> millennium BC in the region.

If this picture is correct, then, according to the actual available chronology for the emergence of enclosures in Alentejo, menhirs and cromlechs would have appeared first than ditched enclosures and this generates an interesting possibility regarding the genealogy of enclosures in the region. We must agree that the evidence still provides a blurred picture recommending prudence, but the available data also encourages the development of a research hypothesis: could the ceremonial megalithic enclosures be the predecessors of the ditched ones in the context of a social need for ceremonial and monumental places? To assume this hypothesis some postulates should be met: a good chronological frame for both cromlechs and earlier enclosures is needed to unquestionably prove the anteriority of megalithic cromlechs, spatial relations between both types of contexts should be established and some symbolic characteristics should be shared by both.

The chronological variable is still quite fragile. However, the other two show some promising data. It's interesting to note that two old ditched enclosures in the region (Perdigões and Cortes 1) are spatially associated to disturbed megalithic cromlechs.

At Perdigões, the recent data shows that a first ditched system was built around 3500BC in the middle of the natural theatre where Perdigões ditched enclosures stand, just 200 m away from the cromlech located at East, already in the flap plane of the valley. Till now, there is no information that can help to establish the chronological relation between these two contexts. They might have been contemporaneous, but is also possible that the cromlech was older, attracting a later ditched enclosure.

At Cortes 1 the circumstances suggest that the ditch might enclosed some standing stones and, apart from the two stones found at the surface in the area, another menhir was recover about 300m east, remobilized in a chalcolithic hypogeum (VALERA *et al.* 2014a). The global data points to the reuse of some menhirs in the Neolithic enclosure and in later Chalcolithic structures, suggesting a previous existence of a cromlech in the area.

Also at Torrão, where the ditched enclosure is from Late Neolithic, the proximity to a cromlech is interesting (LAGO & ALBERGARIA, 2001). The cromlech seems to have occupied the flat top of the hill, while the ditched enclosure was standing just next to it, covering part of the top and part of the North slope. Both enclosures could have been occupied at the same time, but the fact that a small menhir was reused in the close proto megalith monument could mean that the cromlech was earlier, in some way transformed and subtracted and later substituted by the ditched enclosure, that seems to have respected the previous area of the stoned enclosure, not overlapping it.

But even more interesting is the fact that some of the ideological principles relevant for the monumental projects of several ditched enclosures are also present in megalithic enclosures. That is the case of the locations in eastern orientated slopes and of the relation of the architectures to astronomic events that is observable in several ditched enclosures all over the chronological spectrum of the phenomena (VALERA 2013d). The location and orientation of some of the cromlechs already respond to similar principals, as it happens at Almendres, Vale Maria do Meio, Portela dos Mogos, Cuncos or Vale de Rei (CALADO 2000; SILVA & CALADO 2003; ALVIM 2006), and some of them do not define a complete enclosure, as might also happen with some ditches.

As responses to an emerging social need for monumental forms of expressions, cromlechs and ditched enclosures may have shared a conceptual proximity not yet perceived.

#### 4. FINAL REMARKS

Although small ditches occur already in the Early Neolithic, as documented at Senhora da Alegria (VALERA 2013a) and at Valencia and Ebro valley areas (BERNABÉU *et al.* 2012; ROJO GUERRA *et al.* 2008), it seems that it is from the middle of the 4<sup>th</sup> millennium BC onwards, that ditches clearly define enclosed spaces and that these architectures start to punctuate the Neolithic landscapes of inner Alentejo. This is a trend that would continue during the Chalcolithic, until they stopped being built precisely at the end of the 3<sup>rd</sup> millennium BC (VALERA 2015).

The available information shows that, since the beginning, these architectures were characterized by a significant diversity in location, size, complexity, duration, and intensity of use, although some similarities may be recognized, providing a certain degree of homogeneity that seems to respond to general shared principals and social needs.

Rapidly reaching large dimensions, revealing significant concentrations of labour, some Neolithic ditched enclosures (like Perdigões, Monte da Contenda or Porto Torrão, present investments of monumental order and will develop during the Chalcolithic. Others were small and short living sites, showing discrete structures in terms of size and investment. In both situations, though, and even with relatively small areas excavated in each site, we may found evidences of ritualized social practices. Structured depositions, re-cuttings, manipulation of human remains and funerary practices, are present through all the time span of this phenomena (although with greater intensity during the 3<sup>rd</sup> millennium BC).

In fact, it is during the second half of the 4<sup>th</sup> millennium BC that we can observe in the region an “explosion” of iconography, with the appearance of a diversity of ideotechnic items (almeriense

figurines, schist plaque idols, “horn” idols, zoomorphic figurines, symbolic decoration, ivory items), contrasting with their rarity or nonexistence in previous times. The emergence and proliferation of ditched enclosures is coincident with what seems to be a growing need for ideological display, also expressed by intensification of the investment in the funerary megalithic monumentality. Ditched enclosures became a constituent part of highly elaborated landscapes, built on relations of fluidity between different elements (natural and human made) and expressing a coherent worldview and social trajectory. But, they may be rooted in earlier forms of monumentality and space organization if the suggested antiquity of cromlechs and menhirs is confirmed. The area presents the major Iberian concentration of megalithic enclosures and one of the major concentrations of ditched enclosures. The sharing of some conceptions, like location-orientation to East, and the proximity / mixture / reuse between some cromlechs and menhirs and some ditched enclosures, may indicate that the idea of enclosing in the region was first expressed through the more porous boundaries of stone monoliths. Boundaries to be later implemented through ditches, that provided new possibilities, like the enlargement of the enclosed area and the development of depositional practices.

The genesis of enclosures in Alentejo, though, is still blur. Alentejo’s Recent Prehistory changed dramatically in the last decades due to the new discoveries, and we are now confronted with more complex scenarios that just started to be addressed. There is still a scarce, extremely partial, and sometimes fragile data. In this context, though, small interventions like some of the presented are particularly useful.

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