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VIVARIA IN DOLIIS. CERAMIC JARS FOR DORMOUSE FATTENING FOUND IN ARUCCI

Summary. The excavation of the north house at the archaeological site of Arucci (Aroche, Huelva) has provided interesting data for understanding city planning in general, and domestic architecture in particular. Investigation of their environments has allowed the identification of the distinct functions for which they were intended, including two significant tabernae that were connected to one of the main thoroughfares of the city. In one of them, an interesting set of ceramic fragments has been recovered, whose features allow us to recognize them as ceramic containers for fattening the much-appreciated dormouse. This find signifies an interesting novelty in the archaeological record of the city from which various aspects of the diet of its inhabitants can be inferred, as well as the breeding and production of the rodents.

THE ARCHAEOLOGICAL CONTEXT: THE CITY AND THE NORTH HOUSE

The site of Arucci (Huelva, Spain) is located in the west of the *Provincia Baetica*, on the border with *Lusitania*, in the territory called *Baeturia Celtica* by the chroniclers of the conquest period (Plin. *NH* III, 15). In the city, a number of excavation and research works have been carried out over the last decade, highlighting important areas of the city's urban layout (Campos 2009 a, b). Thus, as of today, a monumental public area represented by the forum and baths has been identified at one of the highest points of the site (Campos and Bermejo 2007; Bermejo and Campos 2009; 2014; Bermejo 2010; 2010–11; 2014); a domestic-residential area in the centre is formed by three *domus* (the so-called column house, north house and possible peristyle house) about which varying degrees of knowledge exist¹ (Gómez *et al.* 2010; Bermejo *et al.* 2014); and a suburban zone made up of the necropolises, to the north and south of the city, with a large enclosure at the north identified as a *campus* (Bermejo and Campos 2011; Bermejo *et al.* 2015). As this settlement was an ex-novo foundation, its urban lay-out was classical and organised. It ranks as a small provincial community, fully immersed in the Roman urban lifestyle (Figs. 1 and 2).

Digs carried out in the winter of 2014–15 revealed a *domus* built around a tetrastyle atrium (Fig. 3). This house, whose presence was already known (Gómez *et al.* 2010; Bermejo *et al.* 2014),

¹ Nevertheless, geophysical prospecting on that site has revealed the existence of at least eight more houses, each built around a courtyard.



FIGURE 1
Location of the city.

has now been completely excavated, which has allowed the recovery of much stratified material. Currently being studied, it will undoubtedly allow the deepening in our knowledge in the functionality of each of its rooms. The floor plan recovered shows a *domus* of 350 m², in which a tetrastyle atrium provides a central focus, around which all the rooms are arranged. The entrance is from the western side, directly from the main road that runs in a south-north direction along its façade. Passing through the entrance, one arrives in a *vestibulum*, then the atrium and a series of *cubiculae* and the *triclinium*, one of the biggest rooms in the house. Connected to the main road and without communication to the *domus* were two *tabernae*, in one of which (H9) many ceramic and numismatic finds were found. Here too a range of broken pottery was discovered: seemingly containers used for dormice fattening; a practice which is known from both the literary sources and archaeological evidence elsewhere.

THE CERAMIC VESSELS IN THE NORTH *DOMUS*

Several fragments were found in *taberna* H9 – in which also an important denarius hoard from the second century AD was discovered – while, in addition, a single fragment was found in a storage unit, as can be seen from the other ceramic discoveries therein. The fragments consist of bases and lids or *opercula* with perforations in their surface. Made from an orangy-brown coloured fabric with a high number of inclusions (as degreasing agents), the walls of the vessels are between 2 and 3 cm thick (Fig. 4). As for the bases, they are of different sizes. The dimensions of the largest



FIGURE 2
Aerial view of the city (2021).

vessel are around 55 cm in height by 45 cm in width (the one found in the storage room), and the smallest is 35 cm by 36/37 cm (found in the *taberna* with the *opercula*). Likewise, the lids show different diameters, 25 and 30 cm respectively, which brings them close to the sizes of the vessels (Fig. 5). In both the bases and the lids, there are small perforations of only 1 cm in diameter. The pieces from the *taberna* can be dated to around the end of the second century AD, due to the association there with African pottery, namely ARSW-A, Hayes forms 3C, 6C, 9 and 14 (Fig. 6). For the piece found in the storage area, a *post quem* date of the early first century AD can be established.

The characteristics of these vessel and lid fragments recall the so-called *vivaria in doliis* described by Pliny, big ceramic jars used to fatten dormice prior to their consumption (*NH* VIII, 211), a process magnificently described also by Varro (*Re Rust.* III, 15, 1–2). The presence of holes in these vessels' walls is reminiscent of the *ollae pertusae* or *ollae perforatae*, small containers used for planting small ornamental plants, and to assist in their transport (Plin. *NH* 17, 64), or even for that of tree species over long distances (Plin. *NH* 12, 16). The small globular pots from Arucci, with diameters of around 40 cm, also had some holes: one in the central area of the base and three in the lower part of the wall; these apertures were usually relatively wide and elliptical, made from the inside while the clay was still fresh, and so leaving small remnants of clay on the outer wall. The clay is usually polished, giving the vase different tones, and a whitish outer covering was added (Meulemans 2015, 170). The fact that the vessels were associated with lids pierced by the same characteristic holes indicates that they were not flowerpots since these do not need such *opercula*. The lids prevented the little animals from escaping and restricted the light and air available once they

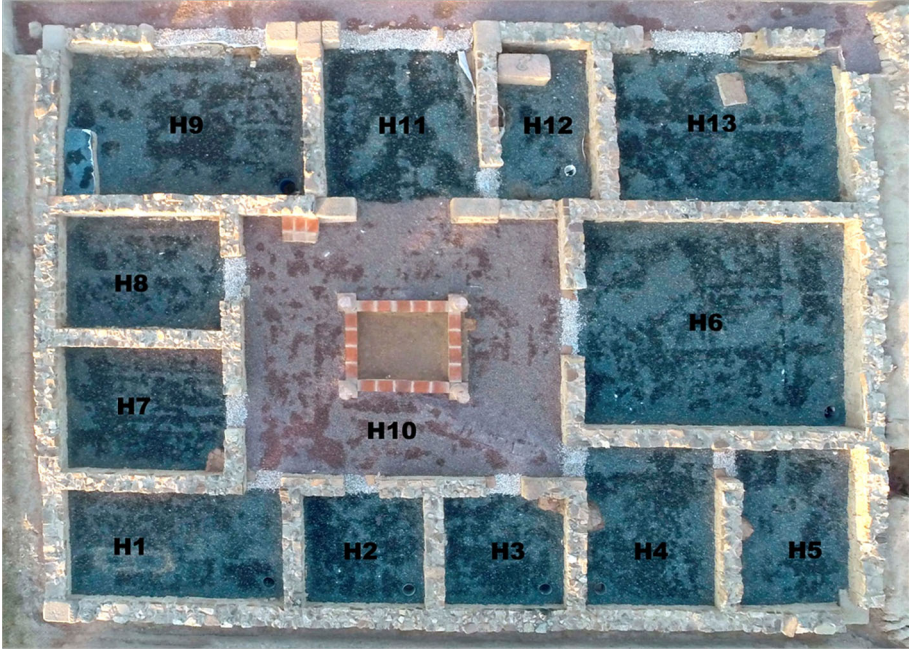


FIGURE 3
Aerial view of the north house.



FIGURE 4
Ceramic fragments recovered from the north house.

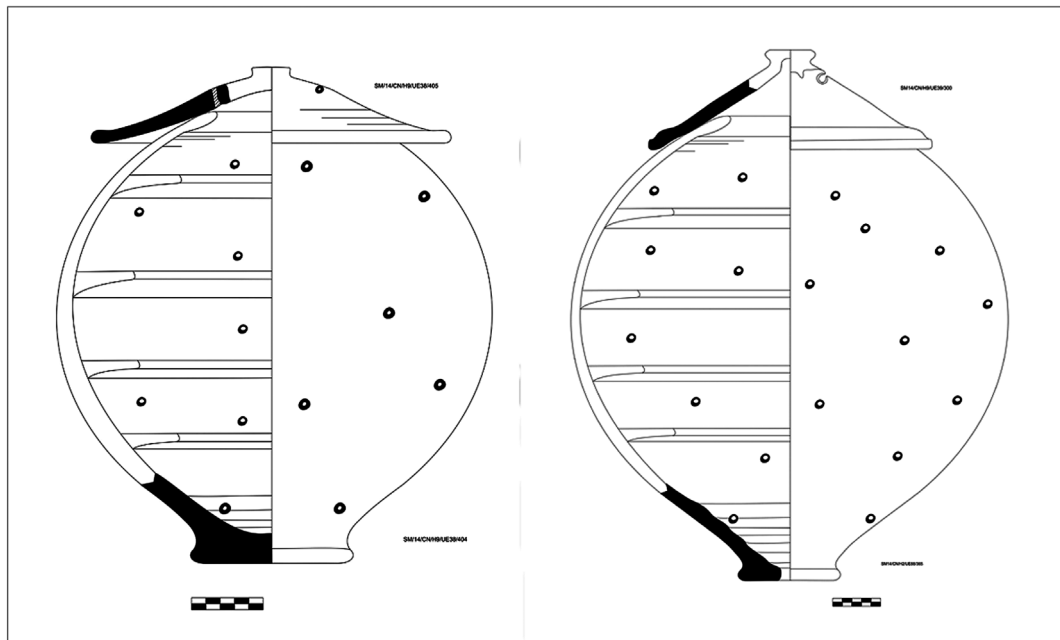


FIGURE 5

Restoration of the vessels from the recovered fragments.

were placed in the container, as Varro affirmed (*Re Rust.* III, 15). The vase type could have a globular shape, as in examples from the Campania region (Pompeii, Castelvenere) (Carpaneto and Cristaldi 1994). The lower part of the containers only is preserved at Arrucci, which is why they lack the *semitae* features (see below); what survives is the bottom where the faeces and other dregs accumulated. Therefore, despite the scanty nature of the remains, we were able to determine the function of these vessels, which constitute the first evidence at the site of the breeding and consumption of dormice. The discovery location, a *taberna*, indicated that this type of comestible was reared and sold in the establishment, a Roman novelty in the diet of the city's inhabitants.

Another element of particular interest appeared in the house's *vestibulum* (H11), the room next to the *taberna* (H9). In the space next to the wall that divides the two rooms, there was recovered a set of fishing-net weights made of lead (Fig. 7). This is made up of 15 pieces, small and thin sheets curled up on themselves, known as 'rolled laminated weights' (Bernal 2008, 200). In shape, they have a cylindrical body of two or three cm length and a diameter of one cm. There are only few weights, their size is too small and their weight too low to suggest they were attached to a net intended for fishing.² We believe that this small set of weights may have been part of a net for catching dormice in the wild (though it might also serve for catching birds). It is also quite possible

² The native fish of the Chanza River is represented by species such as *salaria uviatilis*, *petromyzon marinus*, *anguilla anguilla*, *alosa alosa*, *alosa fallax*, among others (Hermoso 2008, 41-2). Although, at present, there is no known data on their hunting and consumption in the city or its surroundings, we must await future analyses of fauna or other information that allow us to go any deeper into this interesting matter. Many of these species were captured during the Islamic period in the river basins of the south-west, as is in the case of Mértola (Gómez 2004, 249).

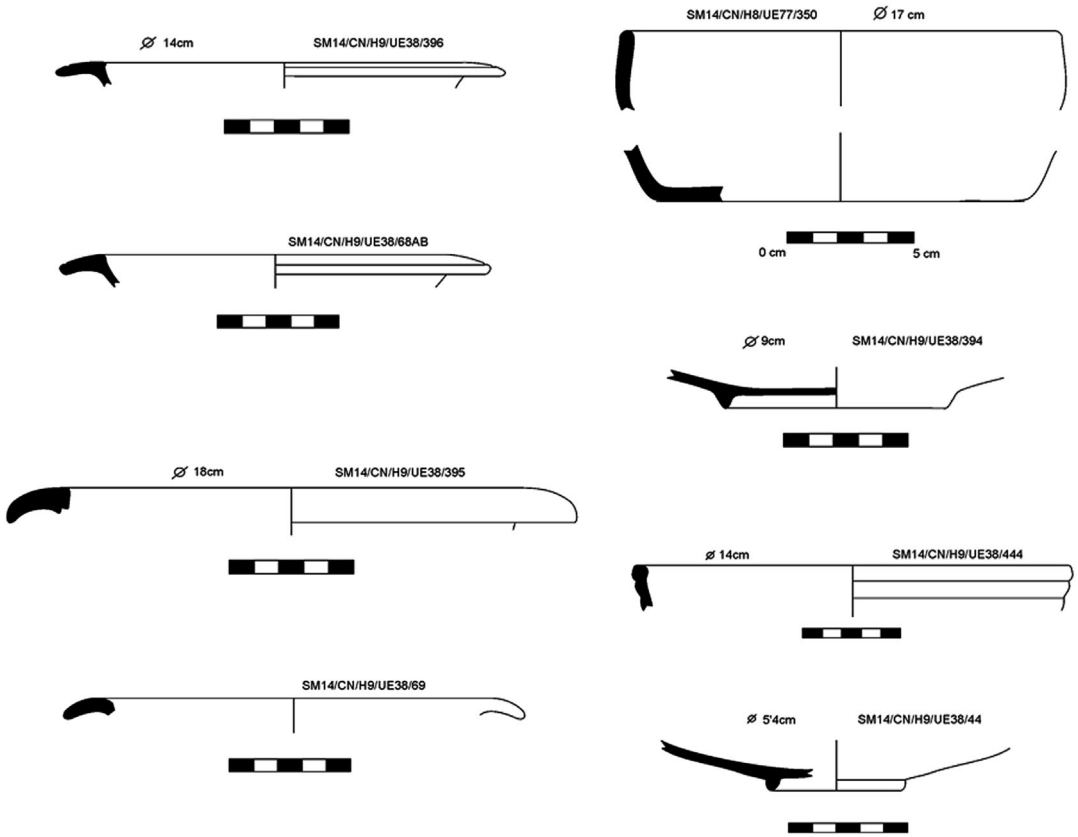


FIGURE 6
ARSW-A productions recovered from the *taberna* in the *vivaria* context.

that this process of netting was required in the breeding pens set up. After their capture, the dormice would have been placed in enclosures or *gliraria*: these could include hollow tree trunks, or some other cavities where they could hide and rear their young. The ceramic vessels and postulated net can therefore both be connected to a practice largely lacking hard evidence: namely, the production of luxury food products, delicacies for banquets – honey, thrushes, dormice, peacocks or fresh flowers (Marzano 2008, 252).

THE CONSUMPTION OF DORMICE IN ROMAN CUISINE: FATTENING AND PRESERVING VESSELS

The dormouse, especially the European edible dormouse (*Myoxus glis*), was one of the most significant and essential foods in Roman luxury cuisine, as is suggested in literary sources referring to its breeding and culinary preparation. As Varro describes, these rodents were reared in so-called *gliraria*. These *gliraria* were enclosures, fenced about by smooth stone or with a thin layer of plaster on the inside, inside which were bushes and holm oaks with acorns, as well as chestnuts to feed these rodents, which did not need much water to survive. In this space, small dens



FIGURE 7
Lead weights recovered in the vicinity of the *taberna*.

were provided so that the dormice could reproduce until they were imprisoned in their ceramic cages (*Re Rust.* III, 15). *Gliraria* then came to denote the ceramic vessels in which the dormice were fattened (Saglio 1896, 1613–14), which are described by Varro thus:

They are fattened in clay jars, often seen on farms, but which the potters make in a very different way from ordinary pots. On their sides, they make holes to introduce the food. In these jars, they put acorns, hazelnuts, or chestnuts. When a lid is placed on the top of these jars to deprive them of light, these animals fatten quickly (*Re Rust.* III, 15).

However, Pliny defined the vessels by the more appropriate term of *vivaria in doliis* (NH VIII, 211, 224) and attributed their invention to Q. Fulvius Lippinus. Bruckner has clarified the confusing historiographical accounts: examining the definitions given by these classical authors, he produced an image (1976). Inside, these *dolia* were equipped with a number of protruding depressions known as *semitae*, or by a single spiralling one, so that the small animals could move about without getting themselves dirty from the rubbish build-up deposited at the bottom of the vessel. The walls of the vessels usually had several holes to facilitate air circulation and provide light. At the top, there were special openings with small containers where food and water were placed. Despite the use of the word *dolia*, these ceramic cages were different from the big storage jars of that name: designed to keep the animals alive, the vessels were suitably small, leaving only restricted space for their inhabitants to move about, as the aim was to fatten them up and not allow them to burn up too much fat (Beerden 2012, 229).

The development of this special culinary taste seems to be specific to the Romans, since although the consumption of dormice is known from earlier and other cultures, it was not so popular (Meulemans 2015, 173). It became a defining cultural aspect of the Romanization process, as a particular method of preparing and serving food. A recipe has even come down to us in the work of the gourmet M. Gavius Apicius:

‘Stuff the dormice with pork mince and the minced meat of their limbs, accompanied by pepper, pine nuts, *laser* and *garum*. After they have been boiled and placed on an earthenware platter, they are put in the oven, or, once stuffed, they are cooked in a *clibanus*’ (*Re coqui*. VIII, 9).

The appearance of this habit is connected to the increasing power and wealth of the aristocracy in the Late Republic. This led to an increasing demand for a wide range of exotic foods and the development of techniques to provide unusual birds, animals, and fish for public and private banquets (Bird 2005, 26). Therefore, the breeding and consumption of the dormouse, a refined delicacy reserved for the wealthiest tables and palates, symbolizes an elite lifestyle during the Late Republic and the Early Imperial period. It was so costly that, at certain times, it was considered excessive, and sumptuary laws to control the purchase and consumption of dormice were enacted. Numerous restrictions were passed in the Republican on into the Imperial period (Beerden 2012, 228). In a beautiful passage of the *Satyricon*, Petronius talks about the gastronomic importance of this delicacy at Roman banquets, specifically at the banquet of the ostentatious Trimalchio: ‘[...] the trays had metal pieces welded to them, from which hung dormice seasoned with honey and poppies’ (XXXI, 10). We can get an approximate idea of the cost of dormice at a later date in Diocletian’s Edict of Prices, where it is said that the cost of ten rodents amounted to 40 denarii (*glires n(umero) (decem) quadrigenta*) (Laufer 1971, 106, 4, 38).

As for the geographical distribution of the consumption of dormice, the literary evidence of dormouse breeding mentions places such as *Ostia Antica* (Var. *Re Rust.* III, 2, 7 and III, 2, 13, 14) and *Tarquini*a (Plin. *HN* 8, 211, 224) as well as *Gallia Cisalpina* (Var. *Re Rust.* III, 12, 2). The archaeological remains are more widespread and telling. It appears that this product was introduced into Roman cuisine from the Campanian-Lazio area and from Tuscany, as in these regions the earliest remains of ceramic jars used for breeding are documented (Colloneli *et al.* 2000, 321). Examples and fragments of this type of vessel for fattening are also found in various other areas

of the empire, demonstrating the popularity of this product among the local aristocracies. The best-preserved specimens, well presented in general works by Beerden (2012) and Bird (2005), are found in the Vesuvian area (Annechino 1977, 772, fig. 10a), where some have been mistaken for hives or *apiaria* (Graham 1978, fig. 1, pl. 14), and at Rome, Ostia (Carbonara *et al.* 2003) and Castelvenere (Benevento, Campania), as well as in the *ager volaterranus* area near San Gimignano (Meulemans 2015, 172). Outside the Italic region, examples have turned up at the Vivarium of Postojna, a cave in Slovenia (Bruckner 1976, 19, abb. 1). They all have a globular or cylindrical body (Carpaneto and Cristaloli 1994; Colonnelli 2007).

In addition to the remains of ceramic jars, archaeo-fauna is another important source, illustrating the diffusion of the consumption of dormice to other territories of the empire. The remains of the animals discovered in York are extremely significant, revealing how the practice of breeding and consumption even spread to *Britannia*, no doubt under the influence of Rome. The analysis of skeletal remains of rodents in archaeological contexts from the second century AD has allowed the identification of the dormouse species *Eliomys quercinus*. This species is not found in the region of *Britannia* today, though it occurs in northern Europe, especially along the French coast. As *E. quercinus* lives in forests and is uncommon in urban areas, and it moreover occurs only in small numbers in the wild, we can deduce that this species in Roman times was deliberately introduced to Britain. Its introduction must have been prompted by the desire of Roman chefs to serve dormice at occasional and exclusive high-society parties and banquets (O'Connor 1986, 621–2). Thus we may hypothesize that the dormouse was deliberately introduced into the territories of the central Mediterranean and the islands, as well as the northern regions of the empire. Consequently, the widespread consumption of dormice suggests that the gastronomic use of this animal was a common-enough practice among the Romans, a culinary art that accompanied them in their expansion into the new provinces (Meulemans 2015, 174).

DISCUSSION

The discovery of ceramic fragments associated with the fattening of dormice represents a fascinating novelty in the study of the Roman culture in the Arucci territory. Not surprisingly, the appearance of these vessels and the evidence of the consumption of dormice have been regarded by some authors as a clear Roman cultural indicator (Meulemans 2015, 174). At Arucci, the morphological characteristics of the vessels and the finding of *opercula perforata* in conjunction, proclaim them to be the remains of *vivaria in doliis*, the ceramic jars for fattening dormice. This discovery enhances our knowledge of the citizen's consumption habits, diet, and social mores, given that such practices – the collection and consumption – of this species and the connotations of luxury and exoticism that it entailed were previously unknown. It should be noted that the species of dormouse (*E. quercinus*) still exists in the Picos de Aroche zone, which is within the dispersal area of this species in the Iberian Peninsula (Moreno 2012).

Having reviewed the literary and archaeological evidence in the preceding pages, it is clear that the consumption of this product was not exclusive to the Italian Peninsula, even if that is where this culinary taste originated. We do not yet know of any other evidence for the consumption or breeding of dormice in other Roman contexts in the Iberian Peninsula, which is highly noteworthy, given that their consumption was a common practice among the elites. This dearth of evidence may be because the finds have gone unnoticed, have not been found, or because ceramic fragments have been misclassified as *ollae perforatae*.

The circumstances of discovery at Arruci are of great interest since we can infer that dormice were sold in one of the commercial premises attached to the north house. We can assign a definite economic activity to this *taberna*. As no remains of dormouse bones (or any other species) have been found during the *taberna* excavation, this indicates that the animal was not consumed on the premises. It then follows that it was a commercial breeding station, whose products were for sale to the public.

The find of *vivaria in doliis* in Arruci moreover allows us to establish to what extent the culinary taste and customs imported by colonists from the Italian peninsula were successful in taking root in a peripheral territory of the province of *Provincia Baetica*. It must be appreciated that the pre-Roman cultural background, with its Celtic settlements, shows no indications for the hunting, preparation, and consumption of this type of animal. It was a culinary trend imported by Rome to these western territories of *Baetica*. The growing fashion for consuming these rodents led to their collection, breeding and fattening, as well as the development of recipes on how to cook them. The importance of this delicacy in the diet of the territory's inhabitants was a cultural matter, not a caloric necessity.

Thus, archaeological data demonstrates at Arucci a specific practice of Varro's *pastio villatica* in the territory of Arrucci (the *ager aruccitanus*), the hunting and breeding of dormice as a gastronomic product. Small weights made of lead were also found not far from the ceramic fragments. It would of great interest to confirm that these metal items were part of the apparatus for the netting of these rodents. Although we cannot find much in the literary sources about how dormice were collected in the *gliraria*, the need for their capture is a certainty (see above). We therefore interpret these weights as counterweights for the nets used to catch the animals, further, if obliquely, demonstrating the breeding of these animals.

Finally, it should be added that this discovery opens new lines of research that will be pursued through the analysis of faunal remains at Arucci. The revisiting of material collected from already excavated drain deposits or household garbage may assist here, but we will have to wait for new excavations to see more definitely whether they provide data related to the skeletal remains of these rodents. Any such finds would help improve our knowledge of their preparation and consumption at the site, and encourage similar investigation elsewhere in the province. This documentation then is but part of a wider enquiry into the consumption of products, of diet, and animal species exploited in the territory. A wide range of future matters to do with the practice of the *pastio villatica* and its economic resources remain still to be clarified and investigated.

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REFERENCES

- ANNECHINO, M. 1977: Suppellettile fittile da cucina di pompeii. In CARANDINI, A. (ed.), *L'instrumentum domesticum di Ercolano e Pompei nella prima età imperiale* (Rome), 105–14.
- BEERDEN, K. 2012: Roman dolia and the fattening of dormice. *The Classical World* 105(2), 227–35.
- BERMEJO MELÉNDEZ, J. 2010: Anastylosis virtual del Foro de la ciudad hispanorromana de Arucci/Turobriga (Aroche, Huelva). *VAR* 1 (1), 73–6.
- BERMEJO MELÉNDEZ, J. 2010–11: Terracotas procedentes del foro de Arucci/Turobriga ¿Testimonios de culto a lasaugustae et divae? *Anales de Arqueología Cordobesa*, 21–2, 127–46.
- BERMEJO MELÉNDEZ, J. 2014: Un santuario a las Matres en el foro de Arucci: la constatación de las Rixamae en la Baeturia Celtica. *Onoba, revista de arqueología y prehistoria*, n° 2, 107–25.
- BERMEJO, J. and CAMPOS, J.M. 2009: La sala de los ediles de Arucci Turobriga. *Officina Ponderaria Aruccitana. Saguntum (P.L.A.V.)* 4, 187–98.
- BERMEJO, J. and CAMPOS, J.M. 2011: Il campus di Arucci/Turobriga. Un nuovo esempio nelle provincie occidentali. *Atlante Tematico di Topografia Antica (ATTA)* 21, 56–68.
- BERMEJO, J. and CAMPOS, J.M. 2014: El foro de Arucci, un modelo de arquitectura forense en el contexto provincial de la bética. *Actas del XVIII CIAC, Centro y periferia en el mundo clásico* (Mérida), 1561–5.
- BERMEJO, J., CAMPOS, J.M., FERNÁNDEZ, L. and MEDINA, N. 2015: Novedades en la configuración del *Campus Aruccitanus*. *Actas del VII encuentro de arqueología del suroeste peninsular*, 661–72.
- BERMEJO, J., GÓMEZ, Á. and CAMPOS, J.M. 2014: Urbanismo aruccitano: el trazado regulador de la *domus* Norte. *Revista d'Arqueologia de Ponent* 24, 41–50.
- BERNAL, D. 2008: Arqueología de las redes de pesca. Un tema crucial de la economía marítima hispanorromana. *Mainake* XXX, 181–215.
- BIRD, J. 2005: Varro's dolia: jars for fattening dormice. *Journal of Roman Pottery Studies* 12, 26–32.
- CAMPOS CARRASCO, J.M. 2009a: El urbanismo del municipio romano de Turobriga (Aroche, Huelva). *Estudios de Prehistoria y Arqueología en homenaje a Pilar Acosta Martínez* (Seville), 465–82.
- CAMPOS CARRASCO, J.M. 2009b: Estado actual de las investigaciones en la ciudad romana de ¿Turobriga? (Aroche, Huelva). In GONZÁLEZ, J. and PAVÓN, P. (eds.), *Andalucía romana y visigoda, ordenación y vertebración del territorio* (Rome), 7–36.
- CAMPOS, J.M. and BERMEJO, J. 2007: Manifestaciones del culto imperial en la ciudad hispanorromana de Turobriga. In NOGALES, T. and GONZÁLEZ, J. (eds.), *Actas del Congreso Internacional Culto Imperial: Política y poder* (Rome), 251–74.
- CARBONARA, A., PELLEGINO, A., ROSSENI, C., TELLA, F. and ZACCAGNINI, R. 2003: La ceramica di eta repubblicana dal territorio ostiense. *Rei cretariae Romanae Faulorum Acta* 38, 51–62.
- CARPANETO, G., and CRISTALDI, M. 1994: Dormice and man: a review of past and present relations. *Hystrix* 6 (1–2), 303–30.
- COLONNELLI, G. 2007: Uso alimentare dei ghiri (Famiglia Myoxidae) nella storia antica e contemporanea. *Antrocom* 3(1), 69–76.
- COLONNELLI, G., CARPANETO, G. and CRISTALDI, M. 2000: Uso alimentare e allevamento del ghiro (myoxus glis) presso gli antichi romani: materiale e documenti. In *Atti del II Convegno Nazionale di Archeozoologia, Astí, 14–16 Nov, 1997* (Rome), 315–25.
- GÓMEZ, Á., BERMEJO, J., MEDINA, N. 2010: Nuevos datos para la interpretación del urbanismo en la ciudad hispanorromana de Arucci/Turobriga: la Casa Norte. *Romula* 9, 155–75.

- GÓMEZ, S. 2004: La cerámica islámica de Mértola: producción y comercio (PhD thesis. Madrid University).
- GRAHAM, A.J. 1978: The Vari house: An addendum. *The Annual of the British School at Athens* 73, 99–101.
- HERMOSO, V. 2008: Ríos mediterráneos, aproximación a la evaluación del estado ecológico y planificación para la conservación a través de los peces (PhD thesis. Huelva University).
- LAUFFER, S. 1971: *Diokletians Preisedikt* (Berlín).
- MARZANO, A. 2008: Non solo vino campano. La pastio villatica e una rivalutazione della navigazione nell'antichità. *OEBALUS Studi sulla Campania nell'Antichità* 3, 251–65.
- MEULEMANS, L.G. 2015: Vivaria in doliis. A cultural and social marker of romanised society? In SPATARO, M. and VILLING, A. (eds.), *Cuisine and Culture. The Archaeology and Science of Kitchen Pottery in the Ancient Mediterranean World* (Havertown), 170–8.
- MORENO, SACRAMENTO 2012: Lirón careto – *Eliomys quercinus*. In SALVADOR, A. and CASSINELLO, J. (eds.), *Enciclopedia Virtual de los Vertebrados Españoles* (Madrid).
- O'CONNOR, T.P. 1986: The garden dormouse *Eliomys quercinus* from Roman York. *Journal of Zoology* 210, 620–2.
- SAGLIO, E. 1896: Glirarium. *Dictionnaire des antiquités grecques et romaines. Tome Deuxième. Deuxième partie, 1969 ed.* (Paris), 1613–14.