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VORWORT DER REDAKTION

Der 27. RCRF-Kongress fand vom 19. bis zum 26. September 2010 im Nationalmuseum in Belgrad statt. Thema des Kongresses war: „LATE ROMAN AND EARLY BYZANTINE POTTERY: the end or continuity of Roman production?“.

Von den anlässlich des Kongresses präsentierten Postern und Vorträgen wurden folgende nicht publiziert:

M. BERGAMINI, P. COMODI & I. FAGA	Scoppieto: La produzione di vasi a pareti sottili
D. BERNAL CASASOLA, M. LARA MEDINA & J. VARGAS GIRÓN	Roman clay fishing weights in Hispania. Recent research on typology and chronology
A. BIERNACKI & E. KLENINA	Red slip ware from <i>Novae (Moesia Secunda)</i> : 4 th –5 th local production and imports
M. CASALINI	Circolazione ceramica a Roma tra l'età delle invasioni e la riconquista bizantina. Nuovi dati dai contesti delle pendici nord orientali del Palatino
SV. CONRAD	Pottery of the second half of the 3 rd century from <i>Romuliana</i>
T. CVJETIČANIN	Late Roman pottery in Diocese Dacia: overview, problems and phenomena
M. DASZKIEWICZ & H. HAMEL	Roman pottery from Baalbek (Lebanon): provenance studies by laboratory analysis
J. DAVIDOVIĆ	Late Roman burnished pottery from Srem
E. DOKSANALTI	The late Roman pottery from “the Late Roman House” in Knidos and the Knidian late Roman pottery
D. DOBREVA	Late Roman amphorae on the Lower Danube: trade and continuity of the Roman production
D. DOBREVA & G. FURLAN	Progetto Aquileia: <i>Fondi ex Cossar</i> . Commercio e consumo ad Aquileia. Analisi delle anfore tardoantiche alla luce di alcuni contesti
KR. DOMZALSKI	Late Roman light-coloured ware: tradition and innovation
P. DYCZEK	Remarks on the so called legionary pottery
A. JANKOWIAK & F. TEICHNER	A household inventory of a <i>Mirobrigensis celticus</i>
G. KABAKCHIEVA	Spätromische Keramik in den Provinzen <i>Dacia Ripensis</i> und <i>Moesia Secunda</i>
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J. KRAJSEK	Late Roman pottery from <i>Municipium Claudium Celeia</i>
J. LEIDWANGER	Economic crisis and non market exchange: fabric diversity in the Late Roman 1 cargo amphorae from the 7 th century shipwreck at Yassiada (Turkey)
T. LELEKOVIĆ	Pottery from the necropoleis of <i>Mursa</i> (1 st –4 th centuries)
B. LIESEN	First century fine ware production at Xanten (Germany)
R. PALMA	La ceramica dipinta di Schedia (Egitto)
D. PARASCHIV, G. NUTU & M. IACOB	La ceramique romaine d' <i>Argamum (Moesia Inferior)</i>
S. PETKOVIĆ	Late Roman pottery from tower 19 of the later fortification of <i>Romuliana</i>
P. PUPPO	Ceramiche comuni di VI–VII sec. d.C. nella Sicilia occidentale: produzioni regionali ed importazioni dall'Africa settentrionale
D. RADICEVIĆ	Early Byzantine pottery from Liška Čava, near Guča (Western Serbia)
D. RATKOVIĆ	The territory of Serbia in Roman times
CHR. SCHAUER	Pottery of the late Roman and early Byzantine periods in Olympia

- G. SCHNEIDER & M. DASZKIEWICZ In-situ chemical analysis of pottery using a portable X-ray spectrometer
- A. STAROVIĆ & R. ARSIĆ Cherniakhovo-type ceramic vessels from NW Serbia and the question of inhabitants of the central Balkans in the late 4th century AD
- M. TEKOCAK Roman pottery in the Aksehir Museum
- P. VAMOS Some remarks about military pottery in *Aquincum*
- M. VUJOVIĆ & E. CVIJETIĆ *Mortaria* from Komini-Municipium S. (Montenegro)
- Y. WAKSMAN “Byzantine White Ware I”: from Late Roman to Early Byzantine Pottery in Istanbul/Constantinople
- I. ŽIŽEK Late Roman pottery in Roman graves in *Poetovio*

Bei der Korrektur und Durchsicht der Artikel stand mir das *editorial committee* zur Seite. Ganz besonders danke ich Philip Kenrick für die zuverlässige Unterstützung und Dieter Imhäuser (ars) für die gute und freundschaftliche Zusammenarbeit bei Satz und Layout.

Die Zitierweise wurde den Richtlinien der Römisch-Germanischen Kommission des Deutschen Archäologischen Instituts angeglichen (Ber. RGK 71, 1990, 973–998 und Ber. RGK 73, 1992, 478–540).

Susanne Biegert

Ana Patrícia Magalhães

LATE SIGILLATA FROM FISH-SALTING WORKSHOP 1 IN TRÓIA (PORTUGAL)

Introduction

Recently, as part of my master thesis at the University of Lisbon, I have been studying the field reports and the ceramics, in particular the terra sigillata, from the first excavations of workshop 1 in Tróia, Portugal, one of the largest Roman fish-salting production centres known. Although some of the information registered during these excavations was lost, some field reports and letters exchanged by the investigators were preserved and are worth an attentive study, besides allowing the interpretation of an impressive volume of ceramics deposited in the National Museum of Archaeology in Lisbon (Portugal), which may enrich the knowledge of the workshop they came from.

The collection studied is mainly composed of African Red Slip Ware (ARS) type D (with 553 classified vessels). Other kinds of terra sigillata, such as Italian, Gaulish, Hispanic and other African types do not appear in significant numbers.

The archaeological site

The Roman Ruins of Tróia are located at the south-western coast of the Iberian Peninsula, on a sand peninsula bordered both by the Sado estuary and the Atlantic ocean (**fig. 1**). The ancient name and the *status* of this settlement remain unknown but the excavations in the sand dunes of Tróia have revealed several workshops specialized in the fish-salting production, indicative of a large complex of factories that would certainly benefit from the abundance of fish and salt of its surrounding waters in antiquity.

Besides the fish-salting factories a residential quarter, a bath complex, a mausoleum, numerous necropoles and a Paleochristian basilica with painted walls were also uncovered. The excavations of the site and the materials recovered so far suggest an occupation from the 1st century to the beginning of the 6th century.

Workshop 1

The materials studied in this article were recovered during the first excavations of workshop 1, a rectangular shaped production area with fish-salting tanks displaced around a patio, situated between workshop 2 and the bath complex (**fig. 2**).

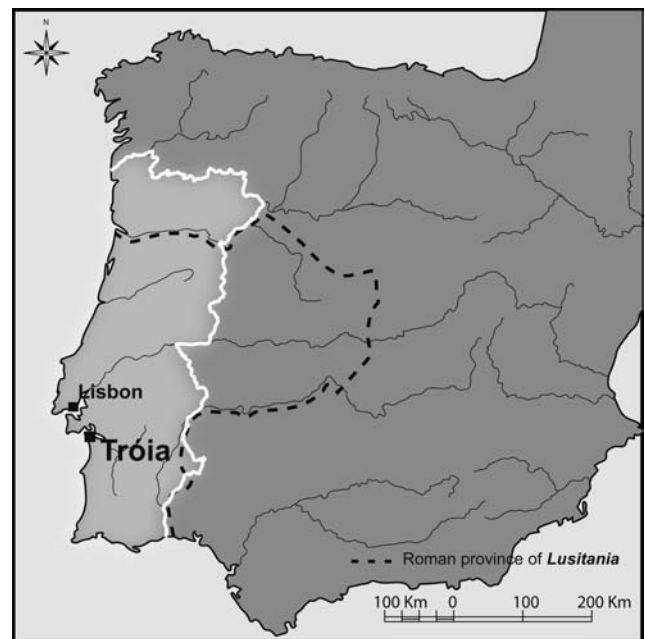


Fig. 1. Location of Tróia on the Iberian Peninsula.

These materials were collected by F. Bandeira Ferreira, who discovered the workshop in 1956 and excavated this factory during the late fifties of the 20th century, releasing the north-western and south-western part of the workshop from the sand dunes (**fig. 3**). Later on, at the beginning of the sixties, M. Farinha dos Santos continued this excavation, uncovering the north-eastern part of this workshop. These excavations were promoted by the National Museum of Archaeology (previous Ethnological Museum Dr. Leite de Vasconcelos), under the direction of Manuel Heleno (**fig. 2**).

Long after these field works, the workshop was interpreted by R. Étienne, Y. Makaroun e F. Mayet and their results were published in 1994. These authors defined three main phases for the factory complex. In the first construction phase identified, during the 1st and the 2nd century, a corridor connected workshops 1 and 2, indicating they were part of the same fish-salting factory and belonged to the same owner. The second phase began after a small period of abandonment

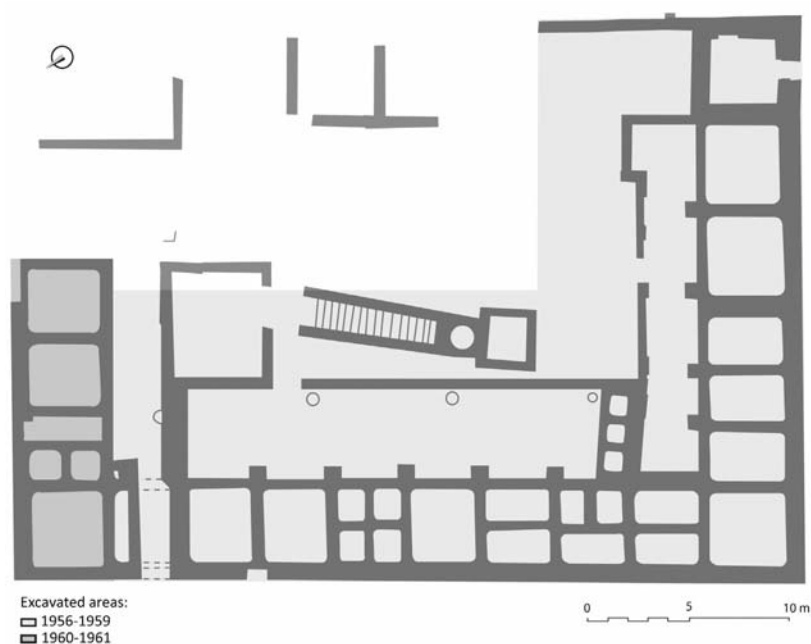


Fig. 2. Plan of workshop 1 (based on ÉTIENNE/MAKAROUN/MAYET 1994) with the excavated areas of 1956–1961.



Fig. 3. Excavation in the south-western fish-salting tanks of the workshop in 1956 (FERREIRA 1956 – AHMNA).



Fig. 4. General view of the fish-salting workshop 1 in 2010.

in the 3rd century, when these workshops were reactivated and divided into smaller production units. According to this interpretation other architectural changes occurred in the 4th century and the fish-salting production seemed to have lasted until the middle of the 5th century.¹

Workshop 1 has not been completely excavated yet. Of the workshop 19 tanks have been uncovered yet, others are still under the dune at the southeast side (**fig. 4**). Recently, in the scope of the Valuing Project of the Roman Ruins of Tróia another excavation was carried out near the workshop's well. This intervention gave interesting results about the abandonment of the workshop confirming the data recovered from

the study of the terra sigillata of the ancient excavations.² The results from that work are presented in another paper of this acta.

Data information and contexts recovered

The materials presented in this paper were collected between 1956 and 1961, according to the field methodology in use at that time. The reports, photographs and drawings, together with the mail exchanged between Manuel Heleno, Bandeira Ferreira and M. Farinha dos Santos, who directed the first

¹ ÉTIENNE/MAKAROUN/MAYET 1994, 48–49.

² SILVA 2010, 104.

excavations in workshop 1, were the interpretative support to contextualize the great amount of terra sigillata of that area.³

The field information recovered indicates that most of the vessels presented in this study came from destruction and abandonment layers mainly deposited over the fish-salting tanks level except for a few pieces belonging to the inside layers of the fish tanks. The description of the excavation identifies debris layers, covered by refuse deposits in-between sand dune layers. A great number of child graves with funerary amphorae and a few adults' burials were identified suggesting that a large necropolis occupied the factory area after the end of the fish-salting production.

Latest imports of sigillata at workshop 1

The present study only presents the last imports of terra sigillata (African Red Slip ware type C and D, Paleochristian Sigillata and Phocaean Red Slip ware) identified in the collection of vessels of the first excavations in workshop 1 (**fig. 5**), most of them dated from the mid-late 4th century to the first half of the 5th century, with some exceptions in the second half of the 5th and in the 6th century. The quantification method was based on the minimum number of vessels (MNV)⁴ and the sigillata sample was classified according to the available typologies.

The first late 4th/5th century group of imports identified was African Red Slip Ware type C3 and C4 (ARS C). Three pieces form Hayes 53B (**fig. 6,1**), dated from the end of the 4th century to the beginning of the 5th,⁵ one big dish form Hayes 54 (**fig. 6,5**), probably dated to the second half of the 4th century⁶ (possibly later according to the appliqué decorations on the broadest part of its rim, common until the middle of the 5th century⁷), and six rims from small bowls Hayes 71 variant B type C3 (**fig. 6,2**), dated from the late 4th century to the early 5th.⁸ One small bowl of the late fabrics of type C exposes the same profile as Hayes 67 (**fig. 6,3**) and belongs to the same period as the last pieces mentioned.⁹ African Red Slip Ware type C4 was identified with three vessels Hayes 73, one in variant A and two in variant B (**fig. 6,4**), dated from the beginning of the 5th century until the middle of that century, or even later.¹⁰

The most important group of ceramics is composed of African Red Slip type D, represented by several forms, mainly in type D1, and only a few in type D2. Some vessels type

Sigillata Types	Forms	MNV	% MNV
ARS C	Hayes 53	3	0,5%
	Hayes 54	1	0,2%
	Delgado 1968/Hayes 67/71	1	0,2%
	Hayes 71	6	1,1%
	Hayes 73	3	0,5%
ARS D	Hayes 52	6	1,1%
	Hayes 56	1	0,2%
	Hayes 58	11	2,0%
	Hayes 59	36	6,5%
	Hayes 60	1	0,2%
	Hayes 61	134	24,2%
	Hayes 62/El Mahrine 5	25	4,5%
	Hayes 64	3	0,5%
	Hayes 62/64, var. Fulford 6	5	0,9%
	Hayes 63	15	2,7%
	Hayes 67	94	17,0%
	small bowl "Hayes 67"/El Mahrine 14	98	17,7%
	Hayes 70	4	0,7%
	Hayes 71	1	0,2%
	Hayes 73	21	3,8%
	Hayes 76	20	3,6%
	Hayes 80A-B/81B	37	6,7%
	Hayes 81	2	0,4%
	Hayes 91	16	2,9%
	Hayes 92	1	0,2%
African	Not identified form (Hayes 60 variant?)	5	0,9%
PS	without shape	2	0,4%
PRS	Hayes 3	1	0,2%
Total		553	100,0%

Fig. 5. Workshop 1. Distribution of late terra sigillata forms.

D1 were identified as Hayes 52, six of them as variant B (**fig. 6,6**), which could last until the beginning of the 5th century¹¹, similar to form Hayes 58, variant B (**fig. 6,7**), identified in eleven pieces.¹² The rare form of a rectangular dish with relief decoration Hayes 56 was identified in one individual; Hayes suggested a dating between 360 and 430¹³ (**fig. 6,8**), but in *Atlante I* one later example is mentioned.¹⁴ Only one vessel belongs to form Hayes 60 (**fig. 6,9**), mainly present in contexts of the 4th century, even though it can appear in 5th century deposits¹⁵, for example in *Conimbriga*.¹⁶

Five rim fragments deserve mentioning due to a profile not identified by the typologies (**fig. 6,10**). These rims are of the same type as that of a complete fragment identified in a recent excavation in workshop 1 (**fig. 6,11**) (presented in another paper of this acta). For that reason it seems possible that they can be associated with number 3 from figure 15, described by J. Hayes as a variant of form Hayes 60, more

³ Ibid. 24–38.

⁴ P. ARCELIN/M. TRUFFREAU-LIBRE, La quantification des céramiques. Conditions et protocole. Actes de la table ronde di Centre Archéologique Européen du Mont Beuvray, 7–9 avril 1998. Collect. Bibracte 2 (Glux-en-Glennes 1998) 141–157.

⁵ HAYES 1972, 82; *Atlante I*, 67.

⁶ HAYES, 1972, 83; 214;

⁷ M. MACKENSEN, Production of 3rd century sigillata A/C (C¹⁻²) or "El Auja ware and its transition to sigillata C3 with appliqué-decoration in central Tunisia. Acta RCRF 38, 2003, 279–286.

⁸ HAYES 1972, 120; *Atlante I*, 71.

⁹ This type could be referred as Delgado 1968 Est. 3.1. M. DELGADO, Terra sigillata clara de museus do Alentejo e Algarve. *Conimbriga* 6, 1968, 47–128. Similar pieces were already identified in the fish-salting factory complex as Hayes 67/71, by ÉTIENNE/ MAKAROUN/MAYET 1994, 45–46.

¹⁰ HAYES 1972, 124; *Atlante I*, 72.

¹¹ HAYES 1972, 78.

¹² *Atlante I*, 82.

¹³ HAYES 1972, 91.

¹⁴ *Atlante I*, 92.

¹⁵ Ibid. 85.

¹⁶ M. DELGADO/F. MAYET/A. M. ALARCÃO, Les sigillées. In: J. Alarcão/R. Étienne (dir.), *Fouilles de Conimbriga 4* (Paris 1975) 270.

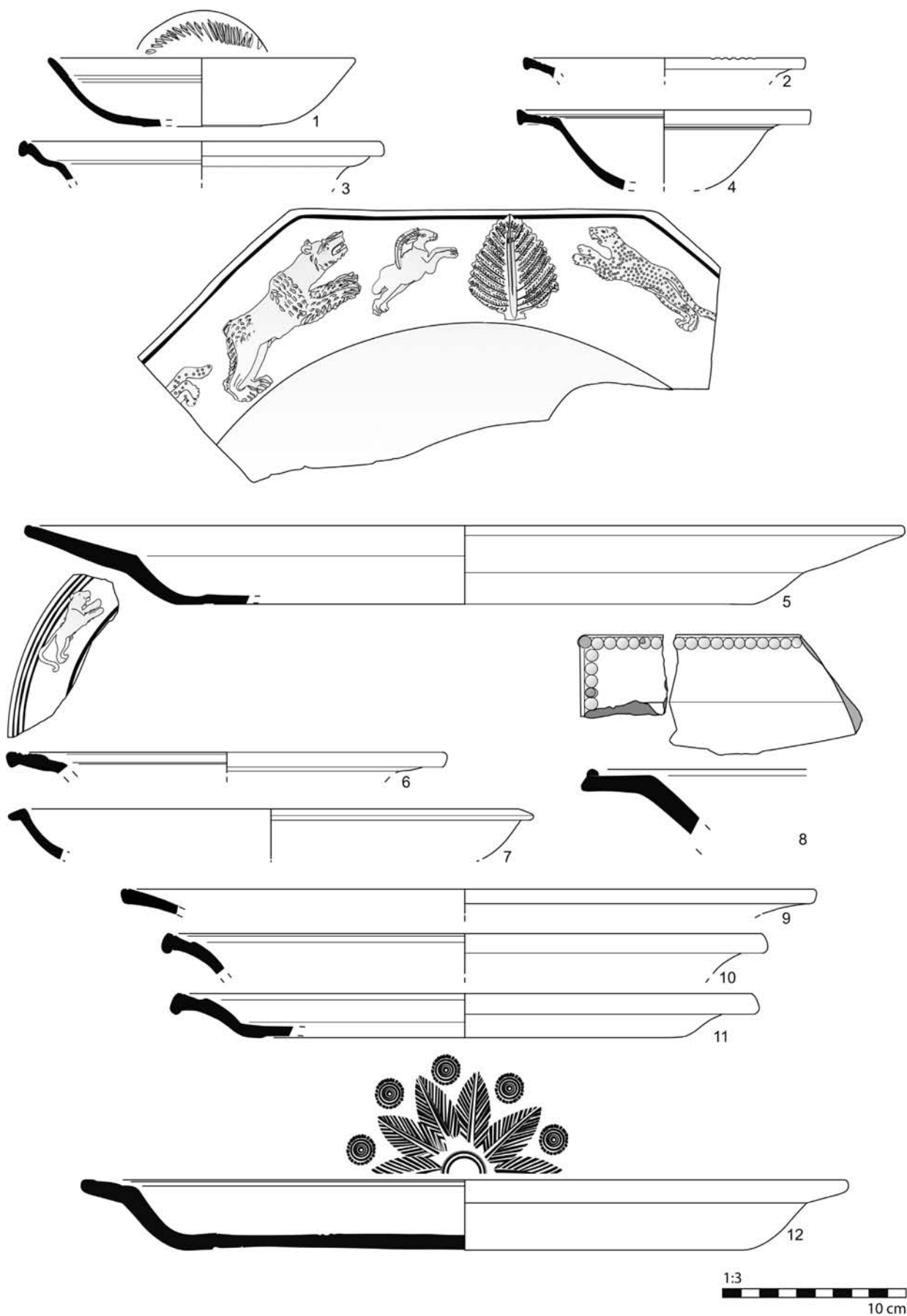


Fig. 6. Workshop 1. African Red Slip ware types C and D.

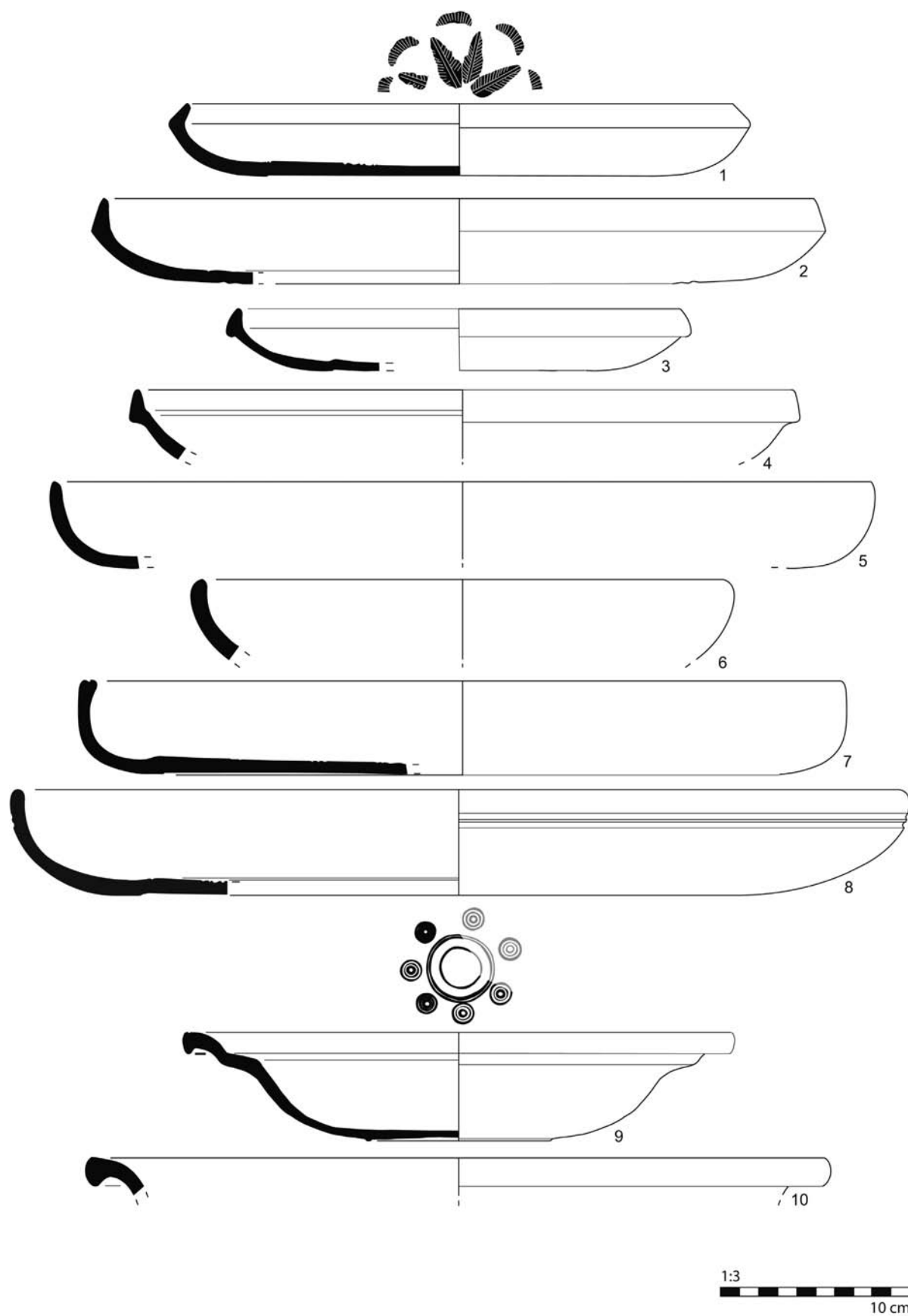


Fig. 7. Workshop 1. African Red Slip ware type D.

likely as another angular hooked rim variant of this large flat-based plate, probably with the same chronology.

Two of the most common forms identified in workshop 1 are Hayes 59 and Hayes 61. From this last form, only 36 examples of variant B were considered, all of them in the fabric D1, one decorated with palm-branches and concentric circles (**fig. 6,12**), dated from the middle of the 4th century¹⁷ until the first decades of the 5th century¹⁸, or probably later in the case of the more flaring wall pieces¹⁹ and the stamped decorated example with palm-branches and crescents from style A (ii) – (iii).²⁰

The large dish Hayes 61 in fabric D1 was mostly recognized in variant A, with 99 examples, one with stamped decoration on the floor style A (ii) – (iii) (**fig. 7,1**), prolonging its dating period until the first decades or the middle of the 5th century.²¹ Although some pieces included in variant A express some transitional marks to some of the variants defined by M. Bonifay in type A/B, only a few examples exhibit the typical features of these variants. Ten pieces were defined as A/B1, eight as A/B2 (**fig. 7,2**), three as A/B3 and other three as A/B4. These variants are well dated to the first half of the 5th century, only variant A/B3 is in use until 480 and variant A/B4 is restricted to the first third of the 5th century.²² The only two vessels of fabric D2 belong to variant A/B3. Variant B appears only with eleven vessels, subdivided in variant B1 (three pieces) (**fig. 7,3**) and in variant B2 (eight) (**fig. 7,4**), dated from the first half of the 5th century according to M. Bonifay.²³ This variant was almost exclusively identified as fabric D2, except for one piece in D1 from variant B1.

There was a considerable number of large dishes Hayes 62A corresponding to El Mahrine 5, identified in 25 pieces as fabric D1 from the Mejerda valley (**fig. 7,5**), form Hayes 64, one in D2 and other two in D1 (**fig. 7,6**), form Hayes 62/64, variant Fulford 6, with six rims in D1 (**fig. 7,7**), and form Hayes 63, counting 15 vessels in fabric D1 (**fig. 7,8**). The period range of these forms is between the second half of the 4th century to the first half of the 5th century.²⁴

The typical large bowl Hayes 67 and its small counterpart, corresponding to El Mahrine 14, were identified as fabric D1, and are very common among the sigillata in workshop 1. The most abundant variant of Hayes 67 is variant B, with 79 exemplars (**fig. 7,9**), dated from the end of the 4th century to the beginning of the 5th. A small number of pieces belonging to variant B show a transitional shape similar to type C, but only one piece had the typical shape of the last variant defined by M. Bonifay as a testimony from the second half of the 5th century (**fig. 7,10**).²⁵ The small bowl similar in shape and fabric to Hayes 67 was designated as form El Mahrine 14, because it occurs in fabric D1, even though it could represent

several workshops from the Mejerda valley and not only the El Mahrine production. 98 MNV were classified as this small bowl, most of them from variant 14.2 (77) (**fig. 8,1**), one in 14.3, and another in type 14.4. However this form shows a great variability in orientation and profile of the two-part flaring rim and body and some pieces could not be integrated in the Mackensen typology²⁶ suggesting its production in other workshops in the same influence area. This bowl is frequently dated according to its larger equivalent Hayes 67²⁷, indicating that the knowledge of this form is still insufficient and deserves a revision.

Other types of small bowls were identified in this collection, all of them in fabric D1. Four rims belonged to form Hayes 70 (**fig. 8,2**), one other to form Hayes 71, variant A (**fig. 8,3**), but the largest number of vessels belonged to form Hayes 73, with 21 pieces, 13 in variant A (**fig. 8,4**), four in variant B and three A/B, because they share features of both variants: such as notches on the lip and one groove on the middle of the rim. These forms are generally dated between the end of the 4th/beginning of the 5th century and the mid–late 5th century.²⁸

20 vessels were identified as Hayes 76, usually dated from 425 to 475²⁹, but the form also appears in earlier levels (**fig. 8,5–6**).³⁰

One of the latest forms present in this group seems to be form Hayes 80, with 19 variant A vessels (**fig. 8,7**), one variant B, and 17 classified as Hayes 80B/81B (**fig. 8,8**), because they have the profile of form Hayes 81B in fabric D1 associated with form Hayes 80.³¹ This form has a chronology issue with the period commonly accepted for its production series, the second half of the 5th century.³² However, there are pieces recognized in deposits dated from the end of the 4th century and the first half of the 5th century.³³ The bowl Hayes 81 was identified in two pieces, one of variant B in fabric D2, and one similar to number 8 from figure 22, illustrated by J. Hayes (**fig. 8,9**).³⁴ These pieces have the same suggested dating as form Hayes 80.³⁵

Besides these forms a lot of flanged bowls were identified in workshop 1, most of them revealing ancient characteristics, but some showing particularities from the 5th century. One high rim in fabric D1, with grooves inside and at the outside of the upper part of the wall, near the junction with the flange, seems similar to J. Hayes' description of the larger variant related to type A (n°28) (**fig. 8,11**).³⁶ According to this rela-

¹⁷ MACKENSEN 1993, 399–401.

¹⁸ HAYES 1972, 100; Atlante I, 83.

¹⁹ BONIFAY 2004, 167.

²⁰ HAYES 1972, 219.

²¹ Ibid. 106–107; 219.

²² BONIFAY 2004, 171.

²³ Ibid. 171.

²⁴ HAYES 1972, 109; 111; Atlante I, 86; 120; M. G. FULFORD/D. P. S. PEACOCK, Excavations at Carthage: The British Mission 1,2. The Avenue du Président Habib bourguiba, Salambo. The Pottery and other Ceramic Objects from the site (Sheffield 1984) 49–50. BONIFAY 2004, 171.

²⁵ Ibid. 173.

²⁶ MACKENSEN 1993.

²⁷ Atlante I, 71.

²⁸ HAYES 1972, 119–120; 124; Atlante I, 71–72; 122; M. MACKENSEN/G. SCHNEIDER, Production centres of African red slip ware (3rd–7th c.) in northern and central Tunisia: archaeological provenance and reference groups based on chemical analysis. *Journal Roman Arch.* 15, 2002, 121–158. J. C. QUARESMA, Economia antiga a partir de um centro de consumo lusitano. *Terra sigillata e cerâmica africana de cozinha em Chãos Salgados (Miróbriga?)* (Lisboa 2009) 194–195.

²⁹ HAYES 1972, 125.

³⁰ Atlante I, 90.

³¹ HAYES 1972, 127–128.

³² Ibid. 128; MACKENSEN 1993, 406; BONIFAY 2004, 173.

³³ J. W. HAYES, Late Roman pottery. Supplement (London 1980) 283; Atlante I, 104.

³⁴ HAYES 1972, 126.

³⁵ BONIFAY 2004, 173.

³⁶ HAYES 1972, 143.

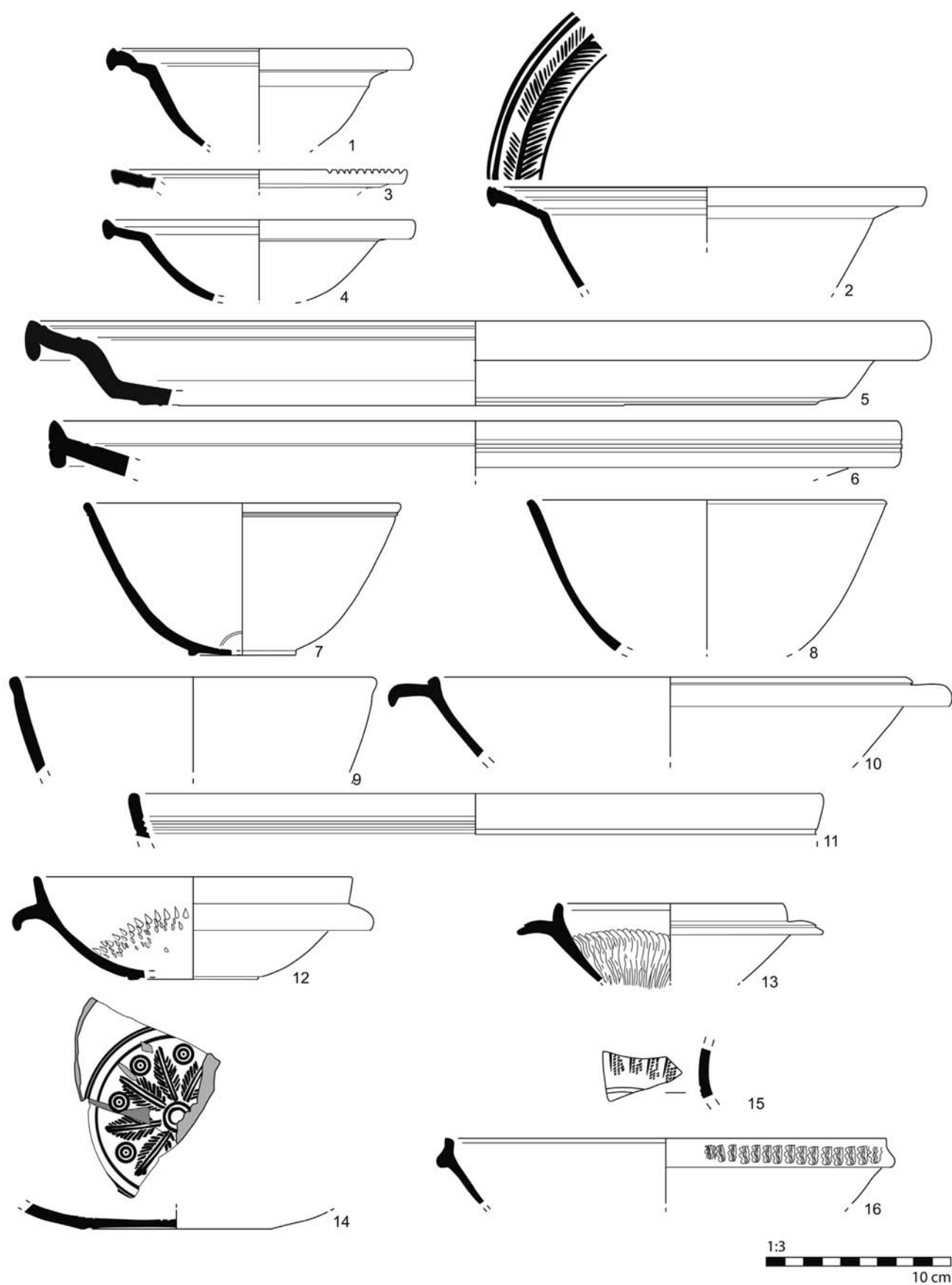


Fig. 8. Workshop 1. African Red Slip ware type D, Paleochristian sigillata and Phocaeen Red Slip ware.

tionship this variant should be dated to the second half of the 5th century³⁷, or earlier³⁸, however one example of this form has already been identified in a later context, dated to 560.³⁹ Two low foots with feather-rouletting on the inside belonged to type A/B – there was not enough of the profiles left to distinguish between the A and B variant. Twelve pieces with a coarser fabric (eight in fabric D2 and four in D1) belonged to variant B (**fig. 8,10**), two of them are of smaller size and had been included in the later variant of this type defined by M. Bonifay (**fig. 8,12**).⁴⁰ The chronology of these bowls has been revised by M. Bonifay, who indicates the first half of the 5th century for variant A, the middle of the 5th for variant B, and the second half of that century for the later variant of type B. Only one piece in fabric D2 was a typical variant C, dated to the middle of the 6th century.⁴¹

One vessel was identified as the flanged bowl Hayes 92 (**fig. 8,13**), similar to Hayes 91, but smaller and shallower, bearing a groove close to the edge of the flange. This form is dated to the middle of the 5th century or even earlier.⁴²

The stamped decorative patterns found on the various fragments of bottom bases, show a tendency to floral and geometric motifs with stylized palm-branches, concentric circles, rosettes and grille-patterns, characteristics of style A, with a wide period range from the beginning of the 4th to the mid–late 5th century.⁴³ Occasionally a rouletted band joins the decorative scheme. These decorations are often in flat-based dishes corresponding to the forms Hayes 59 and Hayes 61 or even the bowl Hayes 67, common forms in the collection of workshop 1 and for that reason the 193 decorated fragments weren't considered in the MNV established (**fig. 8,14**).

Beside African Red Slip ware type D only two fragments of Paleochristian sigillata (PS) were recovered, one bottom floor and one decorated curved wall (**fig. 8,15**). These fragments don't have a classifiable shape, but this fabric is more common during the 5th and the 6th century⁴⁴ and the decorative pattern is similar to a piece from Faro, dated to the 6th century.⁴⁵

This sample provided only one piece of Phocaeen Red Slip ware (PRS) form Hayes 3, with vertical rim forming a narrow flange slightly convex bearing rouletted lines on the outside (**fig. 8,16**). It's very difficult to distinguish the variants defined by J. Hayes for this form.⁴⁶ The form is on the market for a long period, since the beginning of the 5th to the end of the 6th century, but it seems close to variant C, what could indicate a rather earlier date, maybe evidence of the second half of the 5th century.⁴⁷

Conclusion

The complete study of the terra sigillata from workshop 1 demonstrates that the most important type is African Red Slip type D, as previously pointed by R. Étienne, Y. Makaroun and F. Mayet, confirming that the abandonment of the fish-salting production occurred in the 5th century. Yet, this study indicates that the moment of abandonment of workshop 1 occurred before the middle of the 5th century, probably in the transition to or in the beginning of the second quarter of that century, when the level of terra sigillata imports starts to decrease.⁴⁸

Late African Red Slip ware type C is not so significant but some rare forms, such as Hayes 54 were identified. African Red Slip ware type D dates from the mid–late 4th century to the first quarter of the 5th century and this is the period the most considerable number of vessels belongs to (Hayes 59B, Hayes 61A/B and B, Hayes 62A/El Mahrine 2, Hayes 63, Hayes 64, Hayes 62/64, variant Fulford 6, Hayes 67, the small bowl of this last shape and Hayes 71), providing the highest level of imports in the turning to the 5th century.

In fact the large amount of ceramics dating between the last quarter of the 4th and the first quarter of the 5th century indicates that during this period the fish-salting production in Tróia still went on. The forms imported until the middle of the 5th century, or a little later (Hayes 70, Hayes 73, Hayes 76, Hayes 91B, and most probably Hayes 80⁴⁹) found in the abandonment levels, mostly in the garbage deposits that covered the workshop area, could indicate that while this workshop area was being filled up another workshop could still be in use.

Other late ceramics are very scarce (Paleochristian sigillata and Phocaeen Red Slip ware) and should be explained by the existence of a necropolis that later occupied the area of the workshop. The latest forms of African Red Slip ware type D, Hayes 91 in the late variant B and Hayes 91 C, from the second half of the 5th and the middle of the 6th century came from the same levels as the necropolis. The lack of other significant forms typical for the second half of the 5th century confirms the proposed abandonment of the fish-production in the first half of the 5th century, suggesting that the area of the workshop was gradually deserted after being used as garbage deposit and as a necropolis.

³⁷ Ibid. 144.

³⁸ BONIFAY 2004, 179.

³⁹ Atlante I, 107–108.

⁴⁰ Equivalent to Hayes type B/C: HAYES 1972, 141.

⁴¹ BONIFAY 2004, 179.

⁴² HAYES 1972, 145.

⁴³ Ibid. 218–219.

⁴⁴ BOURGEOIS/MAYET 1991, 370.

⁴⁵ C. VIEGAS, *Ocupação romana do Algarve: estudo do povoamento e economia do Algarve central e oriental no período romano* (Lisboa 2009) 181.

⁴⁶ BOURGEOIS/MAYET 1991, 375; A. FERNÁNDEZ FERNÁNDEZ, *Resultados Preliminares del Estudio de la T. S. Focense (LRC) Aparecida en Vigo* (Galiza, España). *Acta RCRF* 41, 2010, 375–384.

⁴⁷ HAYES 1972, 337; BOURGEOIS/MAYET 1991, 374.

⁴⁸ SILVA 2010, 112.

⁴⁹ R. Étienne, Y. Makaroun and F. Mayet already mentioned that the presence of this form in the factory complex of Tróia should be included in the 1st half of the 5th century (ÉTIENNE/MAKAROUN/MAYET 1994, 46).

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