



QUADERNI FRIULANI DI ARCHEOLOGIA



ANNO XXXV - N. 1 - DICEMBRE 2025

QUADERNI FRIULANI DI ARCHEOLOGIA

Pubblicazione annuale della Società Friulana di Archeologia - numero XXXV - anno 2025
Autorizzazione Tribunale di Udine: Lic. Trib. 30-90 del 09-11-1990

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ISSN 1122-7133

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In copertina: *Aryballos* del Museum für Kunst und Gewerbe di Amburgo (provenienza ignota, inv. n. 1917.218 fotografia Ekkehard Diemann).

Pubblicazione realizzata con il sostegno di



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A GROUP OF LATE ROMAN RED SLIP VESSELS FROM WESTERN ASIA MINOR

İclal ÖZELCE, Ergün LAFLI, Maurizio BUORA

*Dedicated to Turco-Italian cooperation and friendship
for the archaeology of ancient Anatolia*

Abstract

In this paper, we deal with Phocaean red slip ware (PRSW) found at Küçük Deniz coastal avenue in Eski Foça in 2001 and 2002. The paper continues previous reports on the same material published in 2023 and 2024 in the same journal (ÖZELCE, LAFLI, BUORA 2023 and 2024), which examined stamped decoration on these sherds. The focus of the present paper is to provide a general introduction to these finds in terms of six archaeological and archaeometrical characterizations: clay analyses, fabric and colours, forms, decoration, other technical features, and ceramic kilns and workshops in Phocaea.

Keywords: Phocaea; western Anatolia; Turkey; eastern Mediterranean; Phocaean red slip ware (PRSW); clay; production; Late Roman-Early Byzantine pottery; archaeometry; classical archaeology.

Riassunto

Un gruppo di ceramiche rosse tardo-romane-protobizantine provenienti dall'Asia Minore occidentale

In questo breve articolo ci occupiamo della ceramica a vernice rossa focese (PRSW) rinvenuta nel viale costiero di Küçük Deniz a Eski Foça nel 2001 e nel 2002. L'articolo è la continuazione di precedenti studi sullo stesso materiale, pubblicati nel 2023 e nel 2024 sulla stessa rivista (ÖZELCE, LAFLI, BUORA 2023 e 2024), che esaminavano alcune decorazioni a stampo su questi frammenti. L'obiettivo del presente articolo è un'introduzione generale di questi reperti in relazione a sei caratterizzazioni archeologiche e archeometriche, quali analisi dell'argilla, tessuto e colori, forme, decorazioni, altre caratteristiche tecniche, forni ceramici e officine di Focea.

Parole chiave: Focea; Anatolia occidentale; Turchia; Mediterraneo orientale; ceramica a ingobbio rosso focese (PRSW); argilla; produzione; ceramica tardo romana-protobizantina; archeometria; archeologia classica.

Özet

Batı Anadolu'dan Geç Roma-Erken Bizans Dönemi'ne Ait Bir Kırmızı Astarlı Seramik Grubu

Bu makalede, 2001 ve 2002 yıllarında Eski Foça'daki Küçük Deniz sahil caddesinde ele geçen Phokaia Kırmızı Astarlı Seramik (PRSW) örneklerini ele alıyoruz. Çalışmamız, aynı dergide 2023 ve 2024 yıllarında yayınlanan ve aynı buluntu grubu üzerindeki damgalı bezemeleri inceleyen önceki iki raporun devamı niteliğindedir (ÖZELCE, LAFLI, BUORA 2023 ve 2024). Makalenin amacı, kil analizleri, hamur ve renkler, formlar, bezemeler, diğer teknik özellikler, Phokaia'daki seramik fırınları ve atölyeleri gibi altı arkeolojik ve arkeometrik nitelik açısından söz konusu buluntuların genel bir tanıtımıdır.

Anahtar Kelimeler: Phokaia; Batı Anadolu; Türkiye; Doğu Akdeniz; Phokaia Kırmızı Astarlı Seramikleri (PRSW); kil; seramik dokusu; üretim; Geç Roma-Erken Bizans Dönemi seramik buluntuları; arkeometri; klasik arkeoloji.

1. INTRODUCTION

In the recent excavations carried out by Professor Ömer Özyiğit in Phocaea between

1989 and 2020, as well as in some salvage excavations conducted by the Directorate of the Museum of Izmir, the discovery of pottery waste dumps, kiln chambers, and workshop



Map 1. Phocaea, other main Late Roman red slip ware production centres and two modern pottery workshops in western Anatolia (drawn by F. H. Kaya, 2025).

areas containing tons of Phocaean red slip ware (hereafter PRSW) ¹ sherds provided strong evidence that the city was a major industrial-scale production centre for red slip pottery during the Late Roman–Early Byzantine period (map 1) ². A considerable number of fragments of red slip tableware was collected in 2001 and 2002 during salvage excavations in the İsmetpaşa quarter, undertaken before the replacement of the main collector of the public sewer in modern Eski Foça (figs 1a-b), and these are typically of PRSW ³.

The exact excavation area is located on the Küçük Deniz ⁴ coastal avenue (promenade), in front of residences numbered 108 and 106 and opposite the Celep Hotel in the northern part of Eski Foça. The sherds were uncovered in 29 test trenches (sondages) and other related units, perhaps part of a large PRSW waste-dumping area. Alongside these, sherds of coarse ware, transport amphorae, and tiles were also found. The assemblages are generally dated between the late fourth and early seventh centuries AD, with the majority belonging to the period between AD 450 and 550. Several architectural units, including walls and rooms, were identified in the excavated area, though their functions were not fully understood. According to the excavators, these walls were below sea level



Fig. 1a. Küçük Deniz coastal avenue from the south (courtesy © website of The Municipality of Foça, 2025).



Fig. 1b. Cadastral map of Küçük Deniz coastal avenue [courtesy © website of Turkish General Directorate of Land Registry and Cadastre, <<https://parselsorgu.tkgm.gov.tr/>> (accessed on 1st of January 2025)].

and probably related to pottery workshops that supposedly stood behind this area.

In total, 386 rim and body sherds, 55 base and body sherds, and 263 decorated base or body sherds were examined from the Küçük Deniz area, amounting to 704 sherds. The material is currently stored in Eski Foça, in a depot serving as an offshot section of the Directorate of the Museum of Izmir.

Numerous scholars have studied PRSW and related finds from Phocaea or nearby areas, including, in chronological order, Félix Sartiaux (1876-1944)⁵, Frederick O. Waagé (1907-1985)⁶, Ernst Langlotz (1895-1978)⁷, John W. Hayes (1938-2024)⁸, Jean-Yves Empeur⁹, Françoise Mayet and Maurice Picon (1931-2014)¹⁰, Ö. Özyiğit¹¹, Serap Uslu¹², Leil Erik Vaag¹³, Sarah Japp¹⁴, Gözde Uğuz Yapıcı¹⁵, Aynur Civelek¹⁶, as well as Philipp Mischa Bes and Anneke Keweloh-Kaletta¹⁷. PRSW, recognizable by its thin reddish slip over a fine fabric often containing small lime particles, was, however, first characterized by J. W. Hayes as the product of a local workshop, with distinctive features separating it from other red slip ware products. This ware represents one of the most complex and ubiquitous archaeomaterials in the archaeological record of western Anatolia.

PRSW refers specifically to red slip tablewares produced in Phocaea, which were mainly utilitarian in nature throughout the Late Roman period. These vessels were manufactured in local workshops led by craftsmen who remain anonymous to us, as there are virtually no signatures or inscriptions on the studied sherds. Most PRSW vessel forms are open shapes, such as bowls and dishes, often bearing stamped decoration. They were widely exported, appearing in large numbers across the western Mediterranean and even on the British Isles¹⁸. The main production period of this ware spans from the late fourth cent. AD into the early seventh cent., contemporary with later productions of African red slip ware, Pitane red slip ware¹⁹, and Smyranean red slip ware, the latter of which is known only to a limited extent.

As mentioned above, A. Civelek already published a preliminary report on these finds²⁰, and an archaeometric analysis was also conducted by Barış Semiz²¹. In 2022,

İclal Özelce completed her doctoral thesis on this material group at Dokuz Eylül University (DEU) in Izmir, supervised by E. Laflı²². The present paper incorporates part of this dissertation and continues two previous papers on the same pottery group, published in the same journal in 2023 and 2024, which primarily examined stamped decoration on these sherds²³. The focus of the present paper is to provide a general introduction to these finds in terms of six archaeological and archaeometrical characterizations—clay analyses, fabric and colours, forms, decoration, other technical features, and ceramic kilns and workshops in Phocaea—which will be presented individually in the following sections.

2. CLAY ANALYSES OF THE PRSW FROM KÜÇÜK DENİZ IN ESKİ FOÇA

The ceramic fabrics of our sherds were closely examined both macroscopically and petrographically. For the mineralogical–petrographic characterization of PRSW sherds, thin-section analyses of 30 samples from Küçük Deniz were carried out in 2008 by Professor Mümtaz Çolak using an optical microscope and a Leica DM/750 P polarizing microscope at the Laboratory of the Department of Geological Engineering, Faculty of Engineering, DEU (table 1 below). For this purpose, slices were cut into 5-6 mm thin sections using a precision diamond saw. These slices were embedded in Araldite and hardened under vacuum for approximately four hours. The hardened samples were then polished with various abrasives, glued to 30 × 50 mm slides with a special UV-cured adhesive, and thinned to 30 μm using diamond abrasives with Struers' cutting equipment for materialographic and metallographic analysis. The resulting sections were prepared for examination under a polarizing microscope. All thin-section analyses and photographic studies were carried out using the Leica DM/750 P, a polarizing microscope designed for geological and materials inspection.

Before microscopic examination, the samples were classified macroscopically according to their colours. Sherds nos. 11, 17, and 22 had reached vitrification due to overfiring

and, therefore, appeared grey. Sherds nos. 12, 15, 16, and 26 were also greyish, but in these cases due to firing conditions rather than vitrification.

Under the polarizing microscope, the PRSW samples from Küçük Deniz were observed to be fine-grained, with grain sizes considerably smaller than 2 mm, and can, therefore, generally be defined as “fine-grained ceramics” (table 1). The ceramics were dominated by a sandy matrix. Their clay was mostly silt-sized and/or subsequently refined. In sample no. 15, discolouration was observed in the pores due to secondary carbonate precipitation (table 1).

The mineralogical and petrographic analyses revealed certain inconsistencies among the sherds, and the fabrics indicate the use of different clay sources. Most PRSW from Phocaea consist of fine silicate, with a sandy matrix dominant in the paste. The clay was very fine, moderately grained (silty sand matrix), and of high quality. The samples generally contained quartz, feldspar, and mica. Although Phocaea is geologically located in a volcanic landscape, volcanic rock grains were absent in most samples, while some contained basalt fragments. It is, therefore, possible that the

clay used for PRSW production was quarried from a volcanic area in the Foça region, given its sandy matrix characteristics. Most likely, the clay was collected from a streambed near the mouth of the Hermus River or its delta—known locally as “Gediz Ağızı”—about 10 km southeast of Phocaea, and was subsequently well sieved (map 2).

According to their mineral composition, the sherds can be divided into three groups: micaceous²⁴, plagioclase (basalt rock fragments)²⁵, and quartz (SiO₂) dominant²⁶ (table 1). Plagioclase and quartz were used as binding elements in the clay, reflecting the regional environmental characteristics. While rock fragments were occasionally visible, quartz minerals of varying sizes and translucency were also observed. Since organic inclusions (plants) added to the paste as binders could shift during firing, air gaps formed in their place, resulting in pores on the ceramic surfaces. Additional porosity observed was due to secondary calcium carbonate (CaCO₃) precipitation. When CaCO₃ remains in water, calcite precipitates and CO₂ is released, leaving some grains in the paste. These secondary carbonates cause colour fading in the ceramics. Furthermore, quartz grains in the paste transmit light.



Map 2. Location of tributaries of Hermus River nearby Phocaea, Eski Foça (drawn by F. H. Kaya, 2025).

The analyses also showed that while some samples lacked mica entirely, others contained minimal amounts, and some had very high concentrations. The traditional ceramic workshops of nearby Menemen, located 36.2 km southeast of Eski Foça, provide a good parallel: pottery vessels produced there, both in the Ottoman period and today (cf. figs. 16a-b on p. 185), often have mica-rich paste. Based on these characteristics, our study material was classified according to inclusions as follows: little/much rock-fragmented, fine/finely calcified, little/much micaceous, fine-grained sandy, and little/

very fine-grained limestone (table 1).

As mentioned above, the clay used for PRSW production during the Late Roman period was obtained from clay beds accumulated by the nearby Gediz–Hermus River. Félix Sartiaux, who excavated Phocaea between 1913 and 1920 intermittently, noted that a clay bed located a few kilometres from Phocaea was used in ceramic production, supporting this assumption ²⁷. Analyses by Mayet and Picon on clay characteristics also revealed that imported goods were produced with clay taken from beds near Phocaea ²⁸.

















Sherd numbers and photographs	Double-nichole views of 30 PRSW sherds from Küçük Deniz in Phocaea under polarizing microscope (taken at the Laboratory of the Department of Geological Engineering at the Faculty of Engineering, DEU, 2008)		
<p>No. 1. S14/4</p> 			
<p>No. 2. S14/9</p> 			
<p>No. 3. S13/14</p> 			
<p>No. 4. S14/2</p> 			

Table 1a. Sherds nos. 1-4.

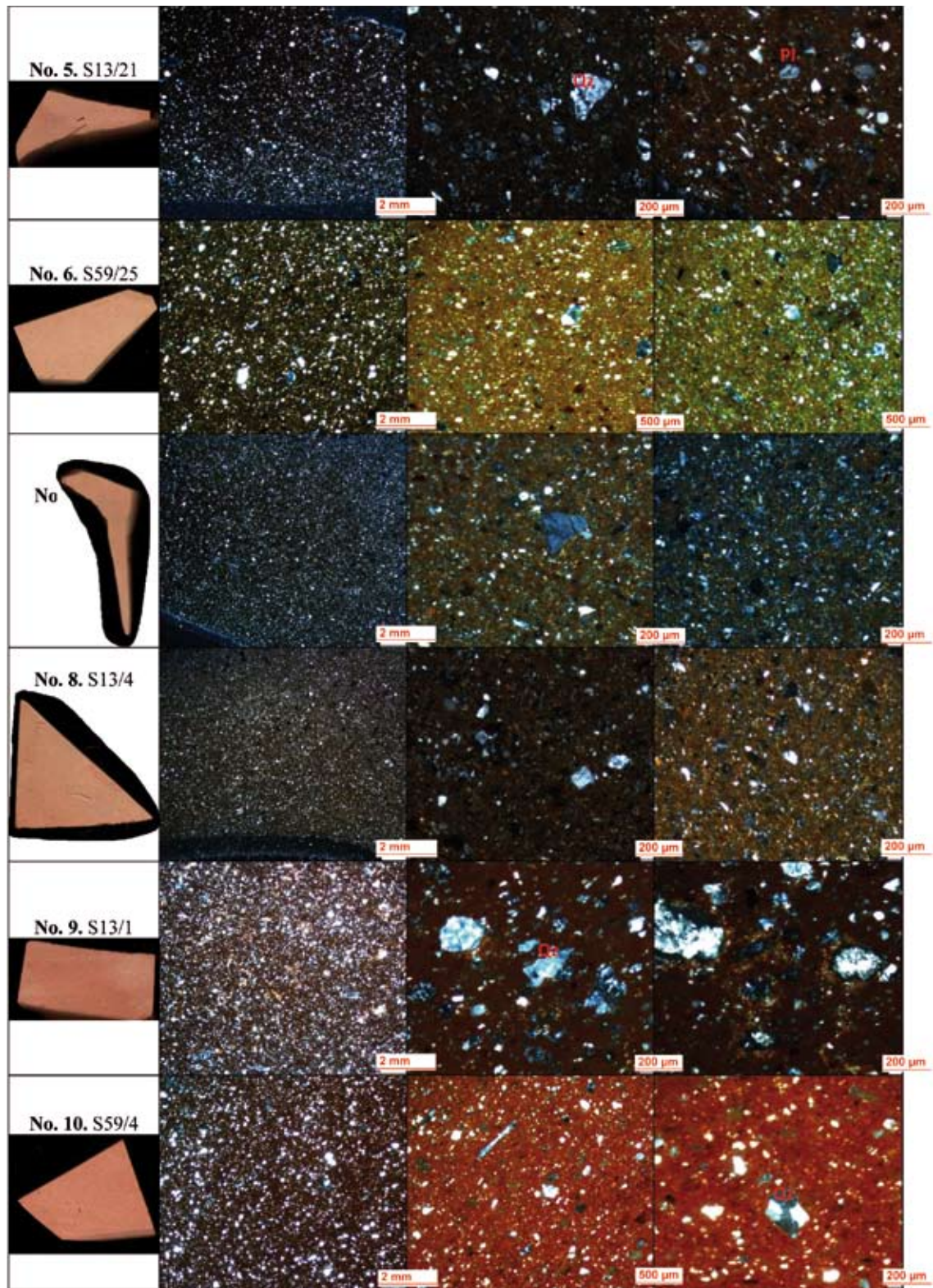


Table 1b. Sherds nos. 5-10.

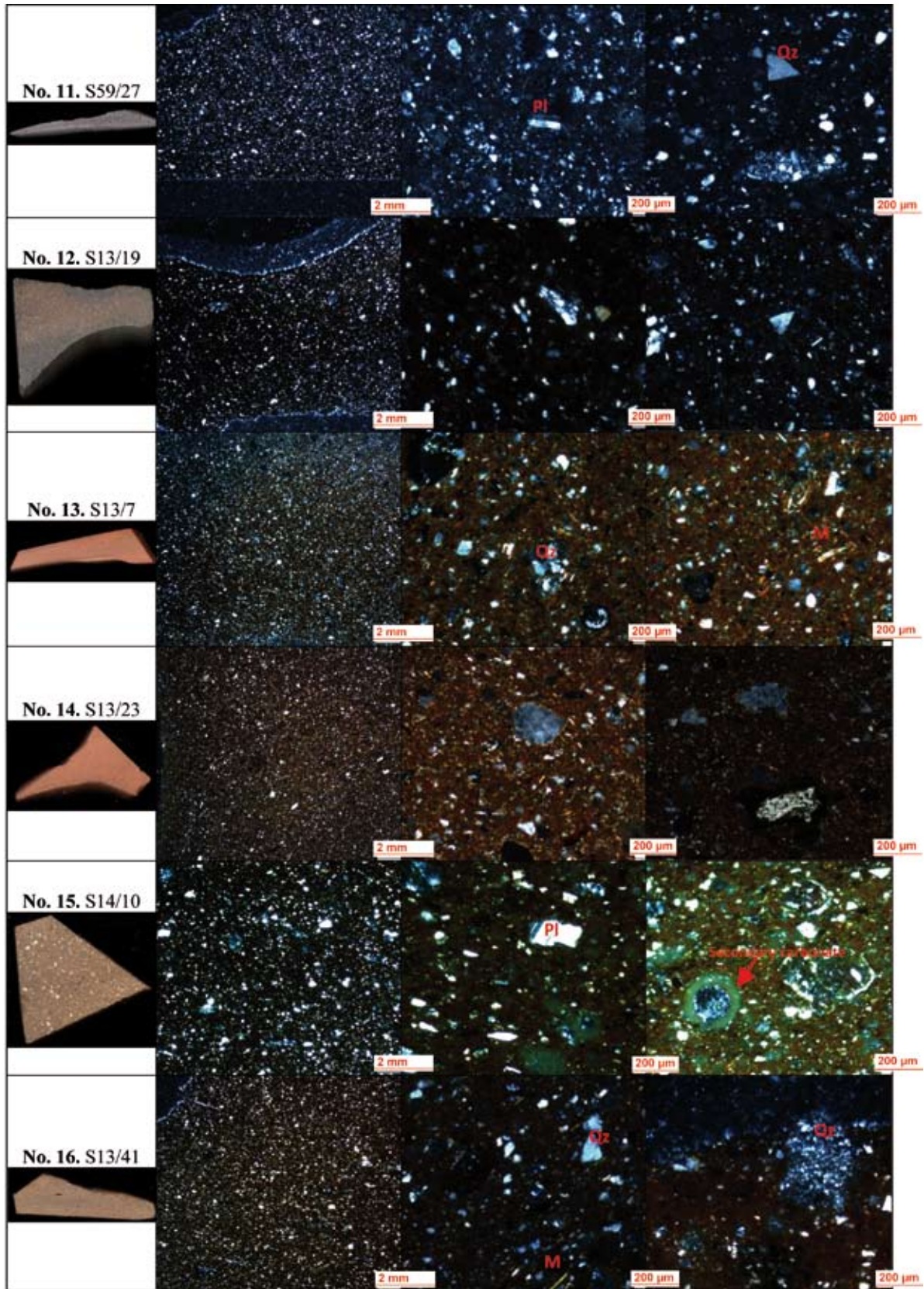


Table 1c. Sherds nos. 11-16.

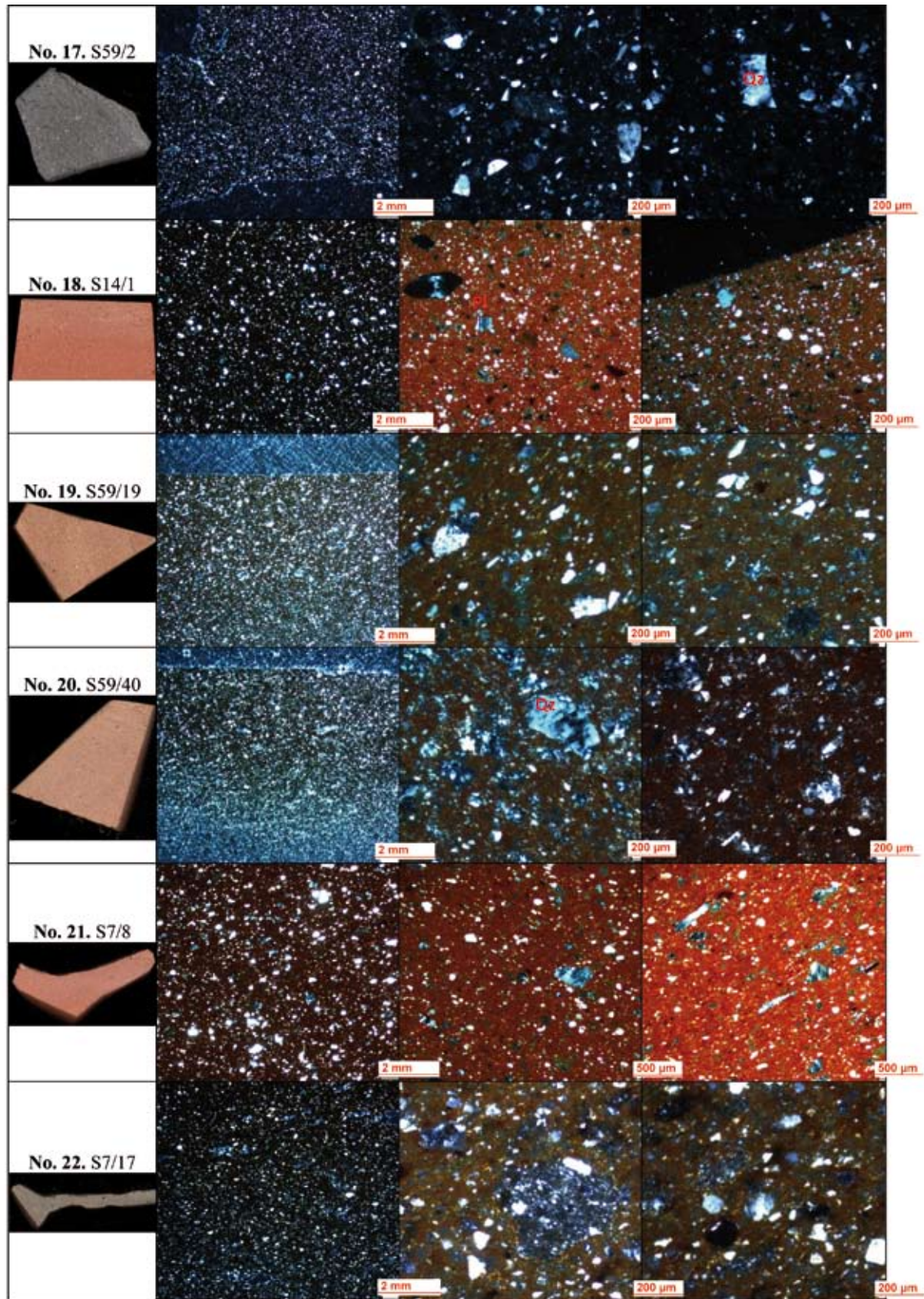


Table 1d. Sherds nos. 17-22.

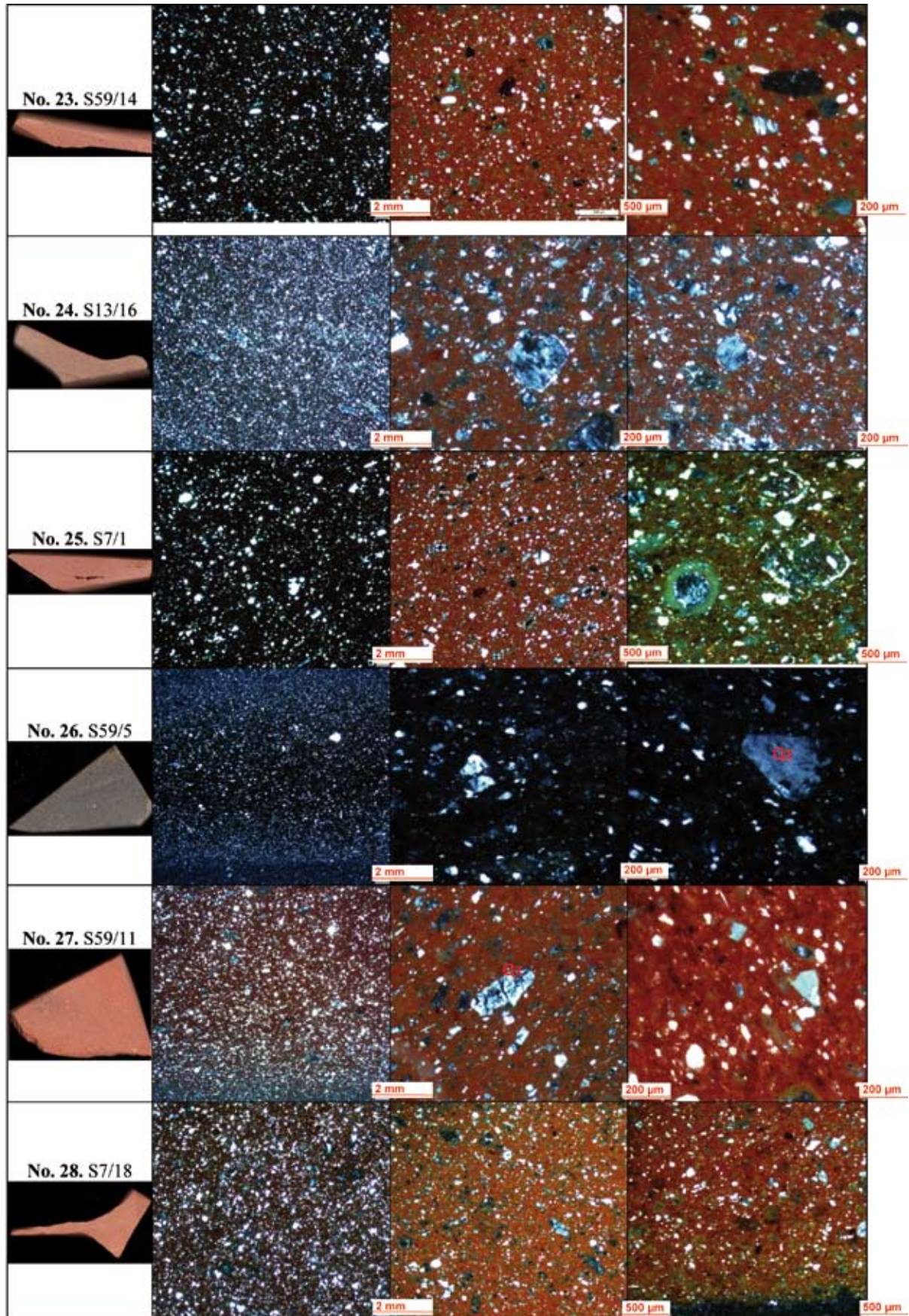


Table 1e. Sherds nos. 23-28.

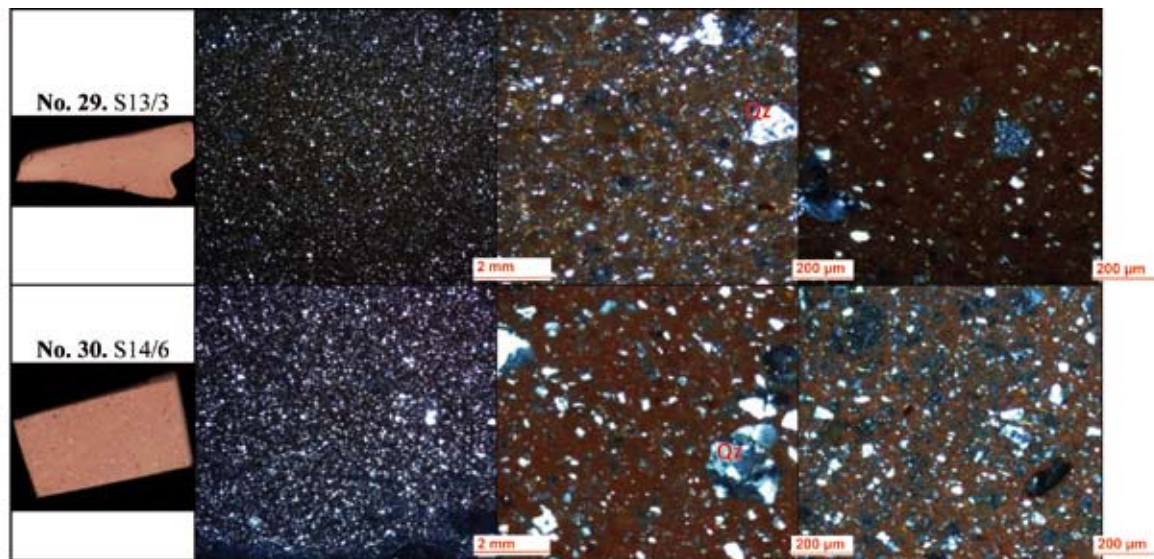


Table 1. Double-nichole views of 30 PRSW sherds from Küçük Deniz in Phocaea under polarizing microscope (taken at the Laboratory of the Department of Geological Engineering at the Faculty of Engineering, DEU, courtesy 2008).

3. FABRIC AND COLOURS

The fabric of PRSW is characterized by a stiff, fine texture; brownish-red with a purple or maroon tinge, covered with a thin red slip over the entire surface; and fine white flecks within a clean matrix. The paste of the sherds from Küçük Deniz that we examined is very fine-grained, slightly porous, generally well-fired, ranging from hard to very hard (rarely medium-hard), and has a smooth structure.

Slip colours vary according to firing conditions. In some examples, the inner and outer surfaces show the same colour, while the rims differ from the paste colour. Occasionally, the outer surface slip matches the paste, whereas the inner slip presents a distinct fine-speckled appearance. Rim colours include tan (dark brown), greyish, black, pinkish, and creamy tones. The overall range spans from pale red to burgundy/purplish shades, with reddish brown, light and dark brown, and standard brown being the most common. Yellowish red, reddish yellow, and pinkish gray/white tones are the least frequent. These colour characteristics remained consistent across both earlier and later productions.

The slip on the vessel surfaces forms a thin layer fused with the clay. Sometimes it was applied more thickly on the interior, producing

a matte or metallic appearance, though never resembling glaze. On some sherds, the entire surface is slipped with a high-quality, thin, uniform coat. Vessels produced until the sixth cent. generally have smooth, semi-glossy upper surfaces, whereas those produced after the sixth cent. exhibit a rougher, less controlled finish. In some cases, only the interior was lined with slip, which appears one or two tones darker than the paste or with a semi-glossy dull sheen. The inner surfaces were carefully smoothed, and toolmarks such as brush and wheel traces are clearly visible (fig. 2).

Outer surfaces vary between smoothed and rough finishes. After firing, the same colour was generally achieved on both inner and outer sur-



Fig. 2. Wheel marks at the inner and outer parts of two sherds from the test trench 26 R 50 (photo. I. Özelce, 2002).

faces, except at the rims. Among these sherds, slip colours most commonly range from red to light/dark red, reddish brown, light to dark brown, greyish brown, and light greyish brown. Less frequently, dark yellowish brown, reddish yellow, and reddish black appear. One of the most distinctive technical features of PRSW from Küçük Deniz is the discoloured rims.

Rim slip colour sometimes matched the inner or outer surfaces, but often appeared in different tones. These ranged from pale/light red to burgundy/purplish red, and from reddish brown to pale brown, dark brown to greyish brown, and dark grey to dark reddish grey. Rarely, intense pinkish white, reddish

black, reddish yellow, and yellowish brown were observed. In addition, dark brown, greyish, blackish, pinkish, and creamy rim colours resulted either from stacking vessels in the kiln or from deliberate application, and are thus among the distinguishing features of PRSW.

Paste colours were documented using the Munsell Soil Color Charts. PRSW sherds most often exhibit red and light red tones in their paste ²⁹. Reddish brown is the second most common, while yellowish red and reddish yellow appear rarely. Pinkish gray/white tones are extremely rare. Based on our 704 sherds, the following colour ranges were determined (table 2).

Main colours	Red	Light red	Yellowish red	Reddish brown	Brown	Pinkish gray	Gray	Reddish black	Pink	Yellow
Coloured areas										
Slip	2.5YR (4/6, 5/6, 5/8), 5YR (5/8, 6/8) and 10R (5/6, 5/8)	2.5YR (6/6, 6/8, 7/6, 7/8) and 10R (6/6, 6/8, 6/4 pale red)		2.5YR (5/4, 6/4) and 5YR (5/4, 6/4)	7.5YR (5/4, 5/6)					
Paste			5YR (5/6, 5/8, 6/6, 6/8) and 7.5YR (6/6, 6/8)			7.5YR (6/2)				
Interior /exterior	2.5YR (4/6, 4/8, 5/6, 5/8, 3/2 dark red) and 10R (4/6, 4/8, 5/4, 5/6, 5/8)	2.5YR (6/6, 6/8, 7/8, 4/2 pale red) and 10R (4/4)		2.5YR (4/3, 4/4, 7/4)	10YR (5/3, 6/3, 7/3 light brown), 7.5YR (4/2, 4/4, 5/2, 5/3 brown), 7.5YR (3/1, 3/2 dark brown), 10YR (5/2 grayish brown) and 10YR (6/2 light grayish brown)					
Rim	2.5YR (4/9, 3/2 dark red) and 10R (4/6, 4/8, 5/6, 5/8)	2.5YR (6/6, 6/2) and 10R (4/2, 4/4, 6/4 pale red)			2.5YR (6/4 light brown), 2.5YR (5/4, 4/3 reddish brown), 10YR (6/3 pale brown), 7.5YR (4/2, 5/2 brown), 10YR (5/2 grayish brown) and 10YR (4/1, 4/2 dark grayish brown)		5YR (4/1, 3/1 dark gray), 10YR (3/1 dark gray), 2.5YR (3/1 dark reddish gray) and 10R (3/1 dark reddish gray)	2.5YR (2.5/1) and 10R (2.5/1)	7.5YR (7/3 pink) and 7.5YR (8/2 pinkish white)	7.5YR (6/6 reddish yellow) and 10YR (4/6 dark yellowish brown)

Table 2. Colours of PRSW sherds from Küçük Deniz in Phocaea.

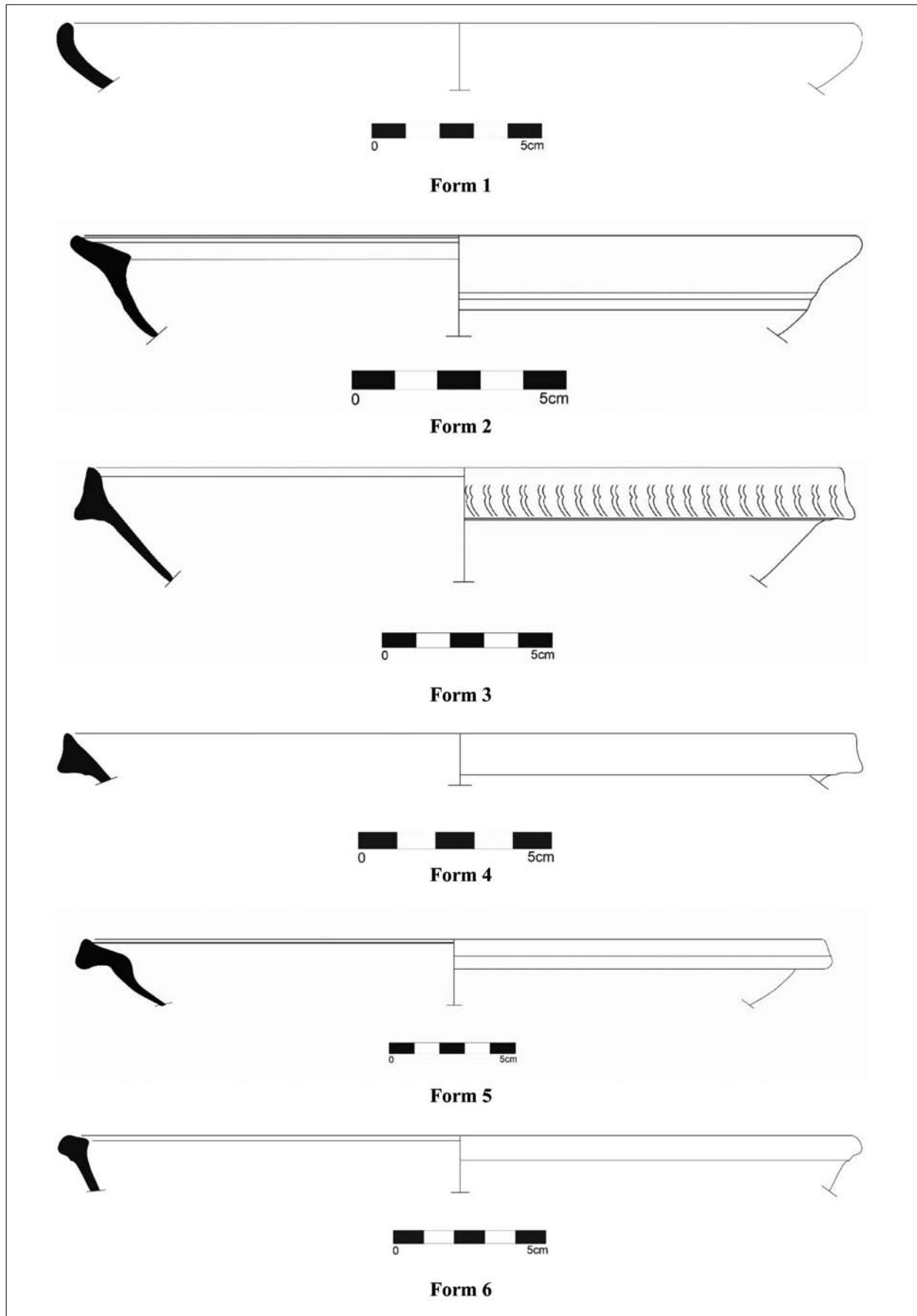


Fig. 3a. Ten main forms of PRSW from Küçük Deniz in Phocaea (drawn by İ. Özelce, 2002).

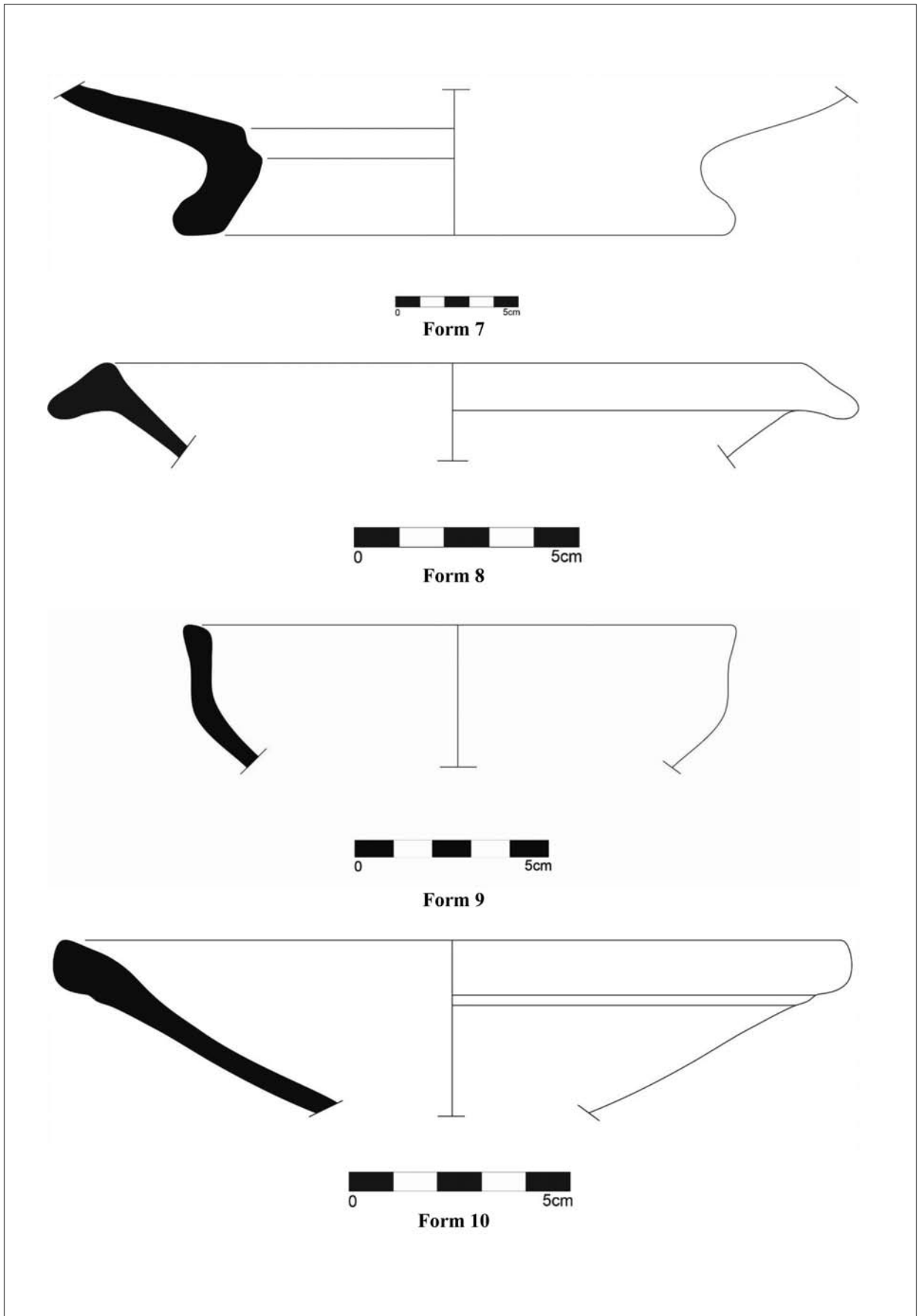


Fig. 3b. Ten main forms of PRSW from Küçük Deniz in Phocaea (drawn by İ. Özelce, 2002).

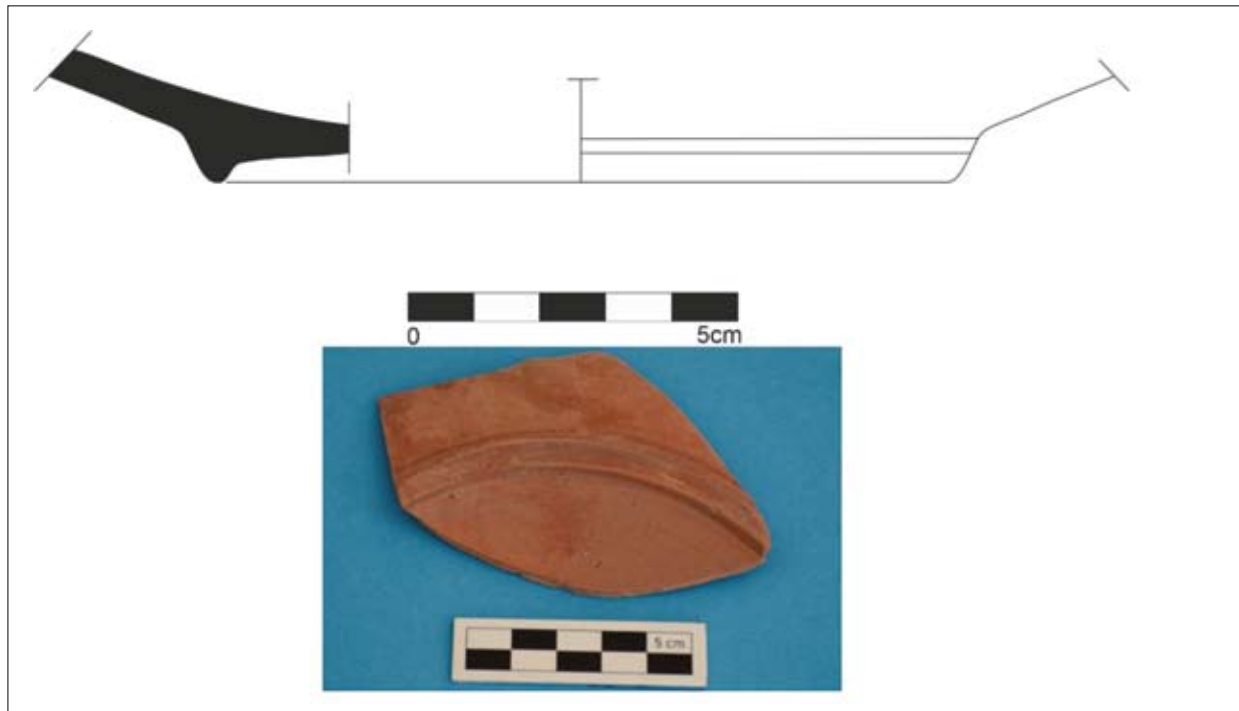


Fig. 4. A high footed variation of Form 1, base no. 387 (drawn and photo. by İ. Özelce, 2002).

4. FORMS

During the Late Roman period, vessels of PRSW were high-end products with features distinguishing them from other contemporary ceramics and were highly demanded as tableware. PRSW finds from Küçük Deniz in Phocaea generally consist of medium-sized plates/bowls; however, large and small-sized forms also occur. Among our material, ten main forms of PRSW were identified³⁰ (fig. 3). It is well known that PRSW focuses on open forms such as plates, bowls, and dishes. In Phocaea, the Mediterranean, and even Britain, the most common form of PRSW is Hayes type 3, a shallow bowl with a short vertical wall incorporating a slight flange, frequently stamped on the inner face with crosses and other motifs.

Most of the examined sherds from Phocaea were fragments of plates and bowls, and when we consider their diameters and heights, these two main forms do not show much typological variety. The first examples of PRSW, dated between the end of the fourth cent. and the beginning of the fifth cent., consist of a slightly inward-turned plate/bowl form (Form 1)

that was produced as successors or imitations of other red slip workshops, and an outward-curved, wide-rimmed plate/bowl form produced under the influence of African red slip ware (Form 2).

While the rim forms of the vessels were inward-curved (Form 1) or wide outward-curved (Form 2) at the end of the fourth and the beginning of the fifth cent., rim typologies with externally thickened high edges (Form 3) began to appear in the fifth cent. and continued until the end of the seventh cent. Gently rounded, raised, or knob-shaped rim forms (Form 10) are also encountered. Bodies of the forms were manufactured as conical, semi-spherical, shallow, near-spherical, or flat-bodied. Among the bases, a high-footed variation of Form 1, narrowing to the base plane in a triangular shape, is seen (fig. 4). The most distinctive typology of the bases among the sherds we examined is a low ring base form, the so-called “false base,” created by “shaving” and, therefore, referred to as a hidden base (fig. 5).

Among the bases of Form 2, transitions are generally evident with a concave profile. At the same time, there are less frequent

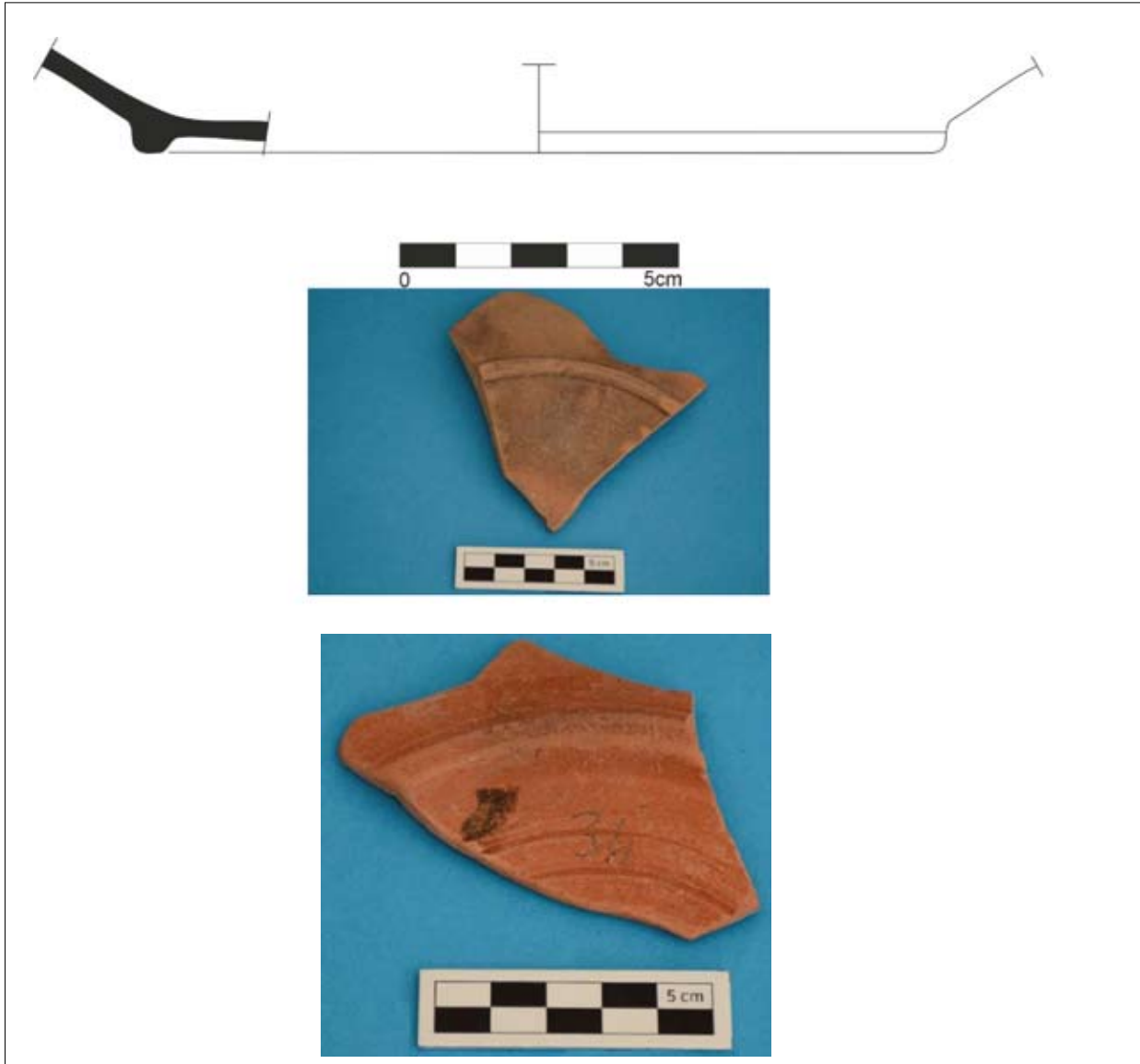


Fig. 5. Two examples of the so-called “false base” (drawn and photo. by İ. Özelce, 2002).

examples that connect directly from the base to the body with no articulation (fig. 6). Bases of Forms 3F, 3H, 6, 7, and 9 have square- or round-profiled feet on the seating plane, which are high (fig. 7a-c). The interior of the bases sometimes slopes towards the tondo, while in other cases it rises. In some examples, the inclined and rising base profiles widen towards the centre.

There is no complete or nearly complete example among the examined samples³¹; only in a broken sherd are the rim, body, and base parts found together (base no. 340; figs 8a–b). A total of 441 sherds were diagnosed with a

form. Among the fragments, five sherds are of Form 1A, four sherds of Form 1B, two sherds of Form 1C, one sherd of Form 1D, five sherds of Form 2A, five sherds of Form 2B, two sherds of Form 2C, one sherd of Form 3A, nine sherds of Form 3F, 47 sherds of Form 3C, five sherds of Form 3D, 36 sherds of Form 3E, 204 sherds of Form 3F, 14 sherds of Form 3G, 18 sherds of Form 3H, one sherd of Form 4, three sherds of Form 5A, six sherds of Form 6, one sherd of Form 8, two sherds of Form 9, and 70 sherds of Form 10. Thus, the large number of examples of Form 3 and Form 10 is noteworthy (fig. 9).



Fig. 6. A base type of Form 2 (drawn and photo. by İ. Özelce, 2002).



Fig. 7a. Base types of Forms 3F (drawn and photo. by İ. Özelce, 2002).

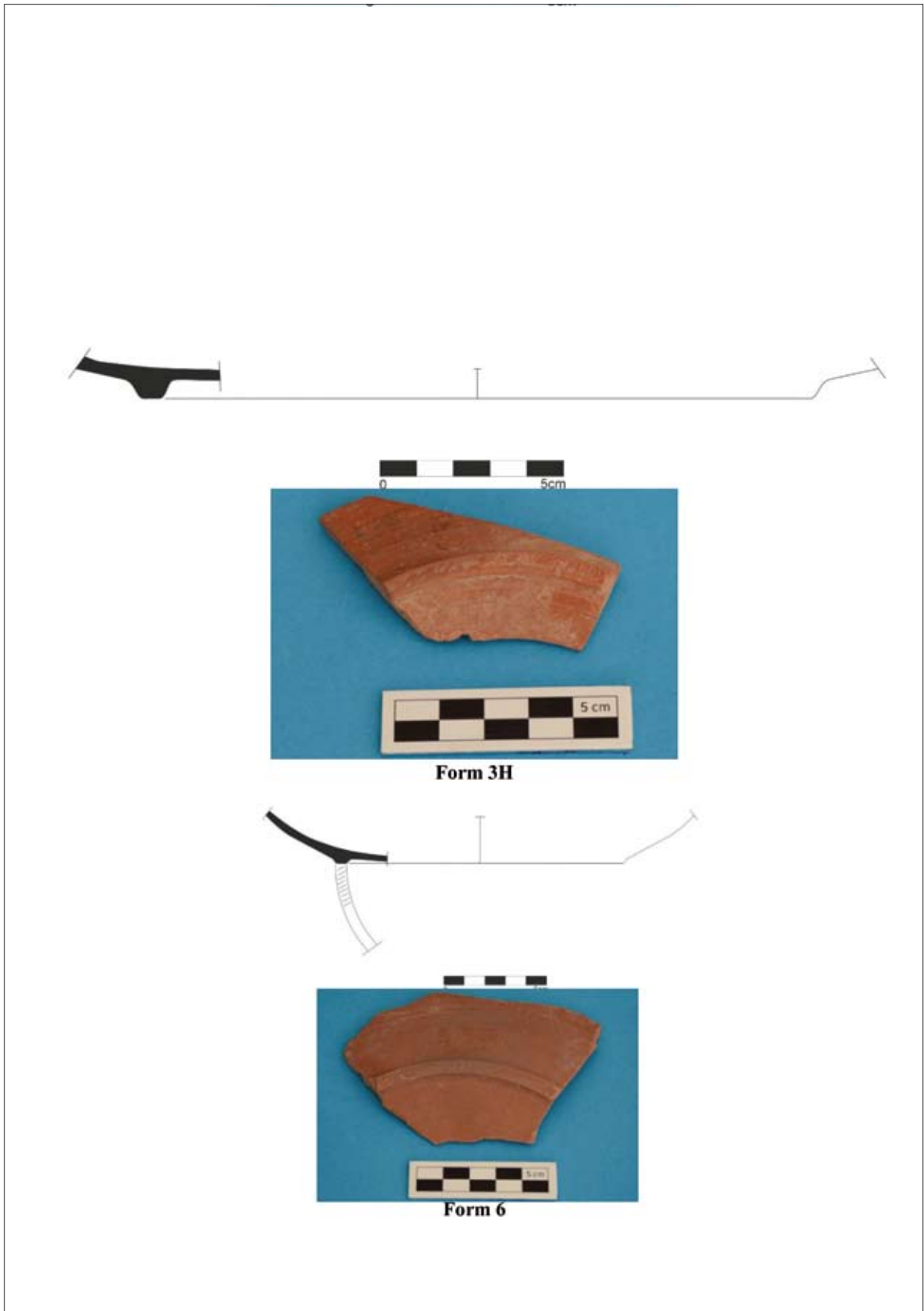


Fig. 7b. Base types of Forms 3H and 6 (drawn and photo. by İ. Özelce, 2002).

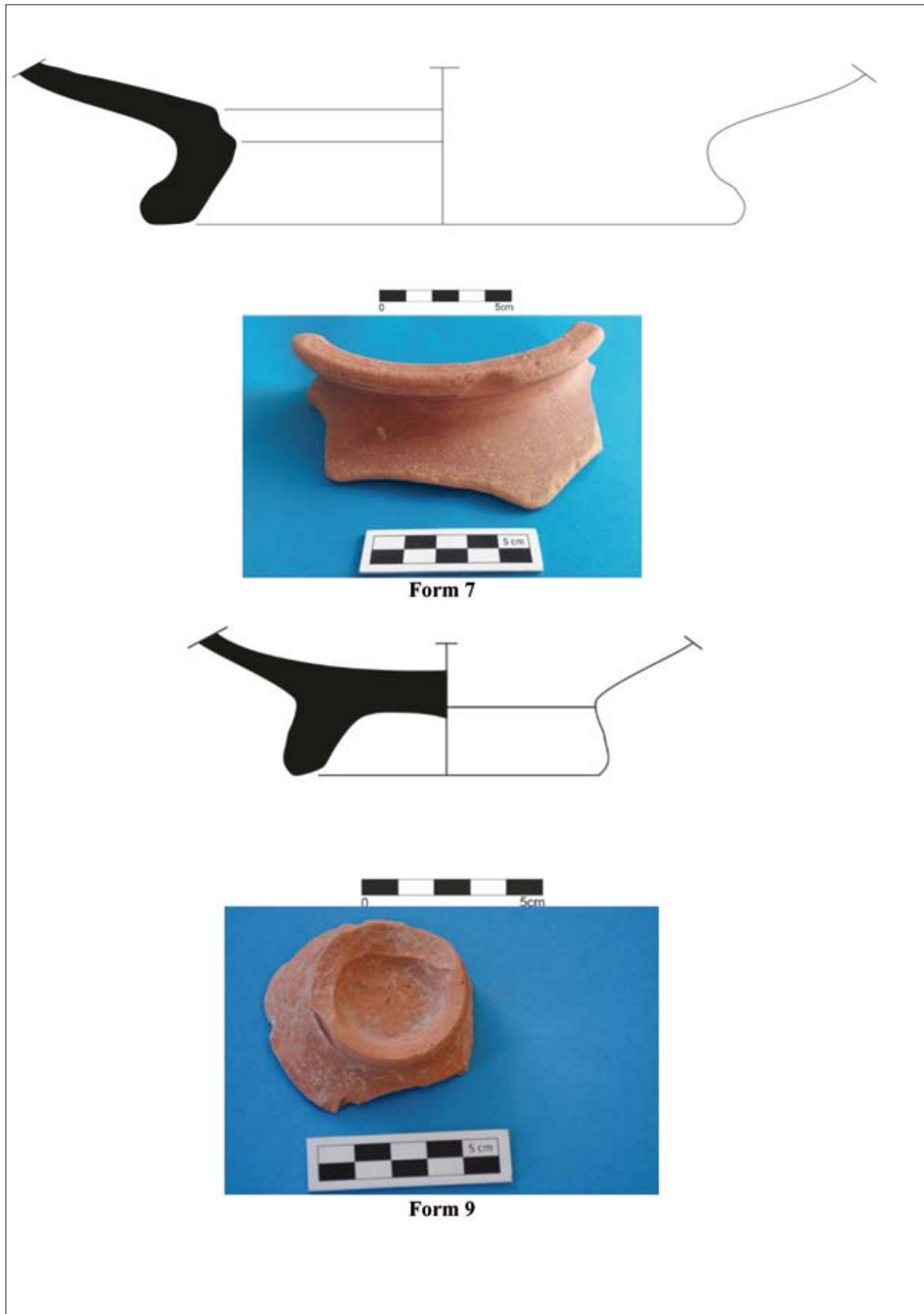


Fig. 7c. Base types of Forms 7 and 9 (drawn and photo. by İ. Özelce, 2002).



Fig. 8. A nearly complete example of PRSW from Küçük Deniz, base no. 340 (drawn and photo. by İ. Özelce, 2002).

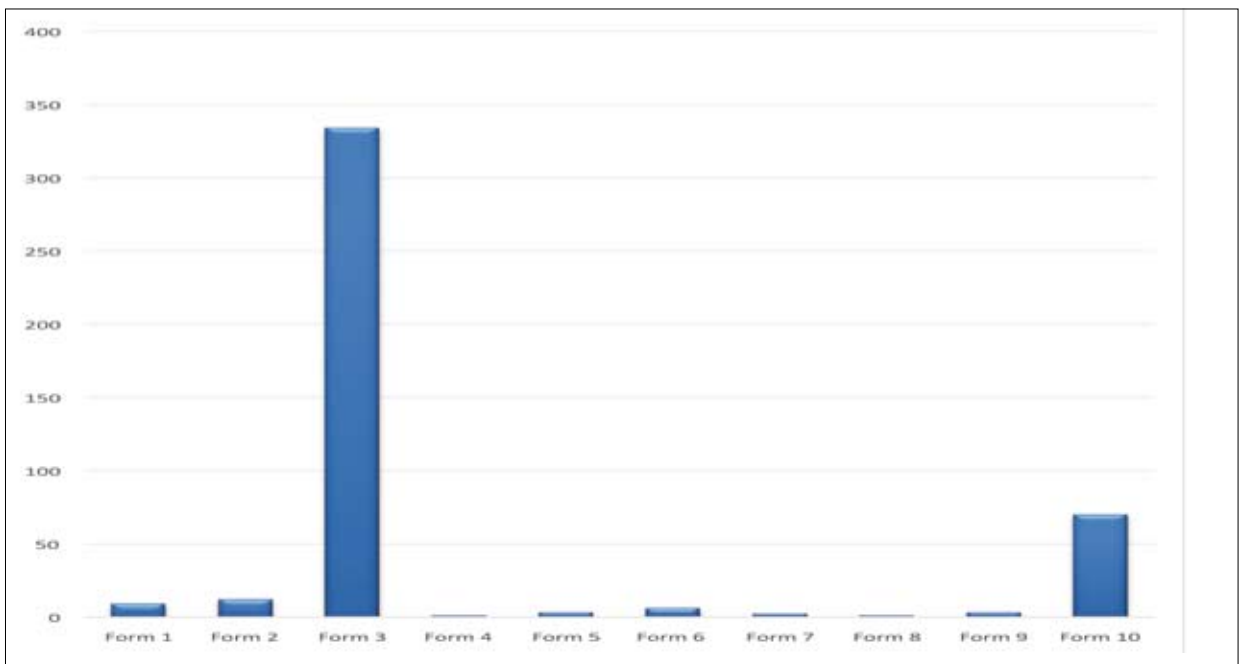


Fig. 9. Proportions of ten PRSW forms among the 704 sherds from Küçük Deniz (drawn by İ. Özelce, 2002).

5. DECORATION

The ornamented examples in our corpus consist of 263 decorated amorphous and base sherds. Some of the samples bear roulette decoration on their rim and lip edges. Others have triangular, inverted triangular, round, and drop-shaped ornaments, either alone or in combination, in single, double, or multi-row roulette decoration (fig. 10). The stamped decorations were probably crafted with motifs prepared in wood or other material moulds. Sometimes the same decoration appears in identical proportions, size, and form, suggesting that they may have been produced in the same workshop, if not by the same potter. At other times, the motif is similar but with varying proportions and sizes. This feature

indicates the existence and activities of various workshops in Phocaea during the Late Roman period.

Decoration on PRSW was executed mostly on the tondi of open forms, simply in an outline style, sometimes through light incisions, with little plastic quality or three-dimensionality. Decoration patterns are relatively cursory and sketchy, incised in an outline technique rather than fully modelled. Motifs and figures were placed in narrow areas evenly and shallowly. Yet, decorative patterns are often elegantly proportioned, elaborate, and possess a certain uniqueness and soft decorative quality. The essentially outline technique used to indicate the decoration might also have provided guidelines for painted designs. There is no decoration on the outer surface of the vessels. While

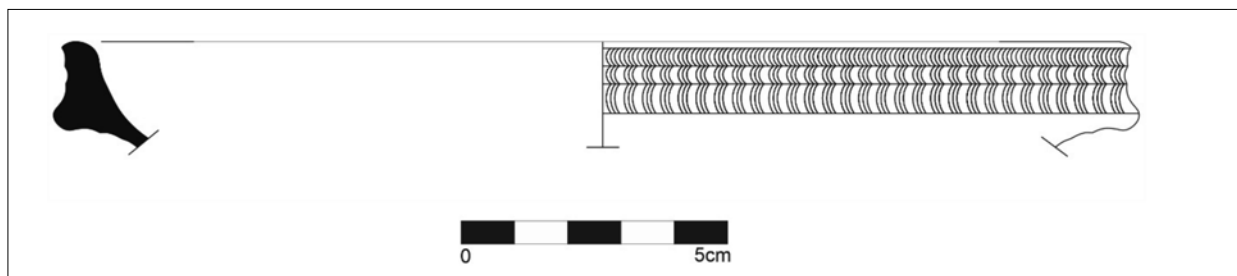


Fig. 10. Roulette decoration applied on a rim fragment (drawn by İ. Özelce, 2002).

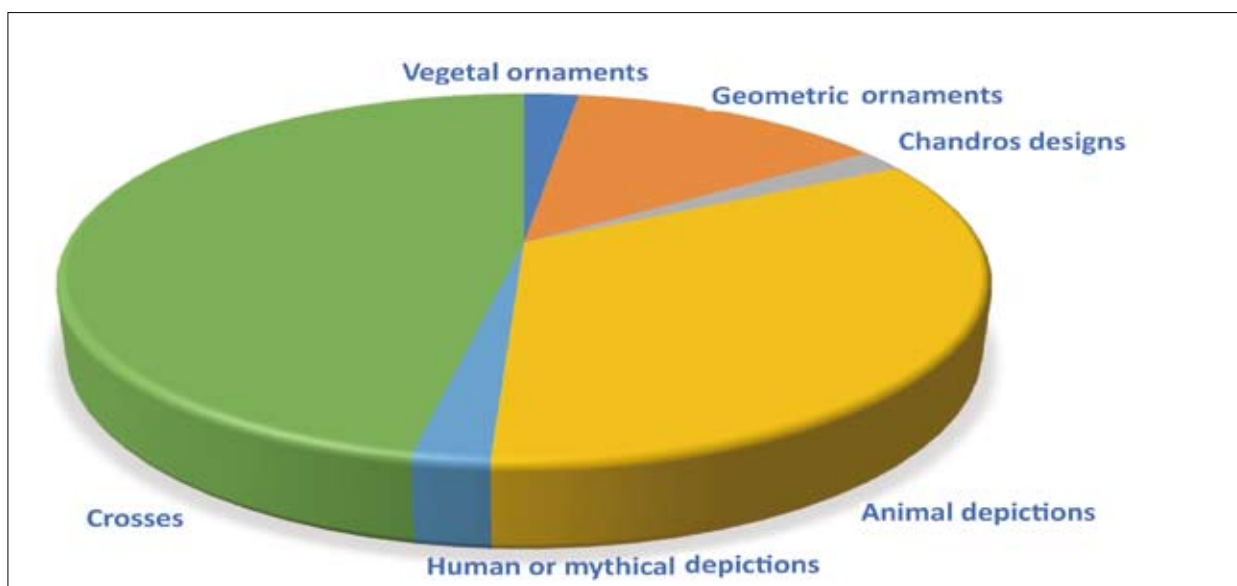


Fig. 11. Proportions of six PRSW motifs or figures among the 263 decorated sherds from Küçük Deniz (drawn by İ. Özelce, 2002).

some tondi were left plain, others display grooves, roulette bands, figural decorations, or a combination of grooves arranged in a symmetrical composition. The roulette band decoration on PRSW is dated between the first half of the fifth cent. and the mid-sixth cent.

Two main groups of ornaments consist of cross motifs (on 123 sherds) and other motifs or figures (on 140 sherds), including vegetal, geometric, and chandros motifs, as well as animals and, more rarely, human figures, sometimes depicted as winged mythical characters (fig. 11). With these recurring motifs and figure types, PRSW displays a certain repetitiveness in ornamentation. However, some patterns exhibit uniqueness, such as vessels with cruciform monograms. The earliest plant decorations are dated to the end of the fourth cent., while the human figures and crosses are dated to the mid-sixth cent. Twelve main typologies of crosses and the number of their finds are as follows (fig. 12): Greek crosses with teardrop pendant motifs (24 sherds), double-lined crosses (19 sherds), double-lined Greek crosses (18 sherds), hooked open Rho-formed Greek crosses (14 sherds), plain-armed Greek crosses (12 sherds), crosses with open ends and teardrop pendants (eight sherds), Greek crosses with quadruple circle pendant motifs (seven sherds), double-bordered and forked-end Greek crosses (six sherds), open-ended striped crosses (five sherds), Greek crosses with very widened ends (two sherds), Greek crosses with widened ends in the form of thin borders (one sherd), and a cruciform monogram (one sherd).

Other decoration groups (fig. 13) include animal figures, sometimes in pairs and mostly with stylized features (88 sherds): lions (16 sherds), birds/partridges/ cocks (14 sherds), rabbits/hares (10 sherds), various animals such as peacocks and ducks (10 sherds), fishes (10 sherds), horses (seven sherds), deers (six sherds), eagles (six sherds), and lamb (one sherd). Geometric motifs (35 sherds, including a unique form of *planta pedis*), vegetal motifs (six sherds), human or mythical depictions (six sherds, including *venatores*), chandros motifs (four sherds), and one unidentified design are also documented. These are highly stylized, and some of their details may have been hand-shaped.

Among the geometric ornaments on PRSW tondos are grooves, incisions, roulette bands, and roulette-printed motifs (including single-row, double-row, and triple-row lines, crescents, circles, triangles, inverted triangles, and dots). In addition, geometric ornaments bordered by grooves or concentric circles were applied both to the tondos and around the vessels.

The decorations of the Phocaeen open vessel forms are quite similar to African red slip ware in terms of technique, style, template, and typology. The decoration on our sherds from Phocaea was divided into three chronological groups:

- The first group, dated 360-450, includes concentric circles and palm leaves.
- The second group, dated 440-490, features vegetal or geometric motifs, chandros motifs, animal or human figures surrounded by roulette bands and grooves.
- The third group, dated 470-580, consists mainly of single motifs rendered in the tondo.

The decoration of the third group is frequently seen in our Form 3 (fig. 3). The figural decoration on the tondi of Form 3 vessels is combined lines and roulettes. Figural decoration is generally documented more in larger vessels than in smaller forms. While some decoration is seen on normal or large-sized vessels of Forms 2 and 3, Form 10 exhibits a plainer appearance.

6. OTHER TECHNICAL FEATURES

In 1972, John W. Hayes suggested that the production technique of PRSW may have involved the use of moulds³². However, Leil Erik Vaag argues that these ceramics were wheel-made³³. Considering the manufacturing process of the Form 3 vessels, he emphasizes that the rim and lip could have been shaped with the clay accumulated at the upper part of the vessel after the body had been formed³⁴.

According to our observations, the PRSW sherds from Küçük Deniz were removed from the wheel after the stamp and roulette decoration had been executed. The vessels must then have been left to dry and gain hardness. Among the hundreds of red slip ware sherds

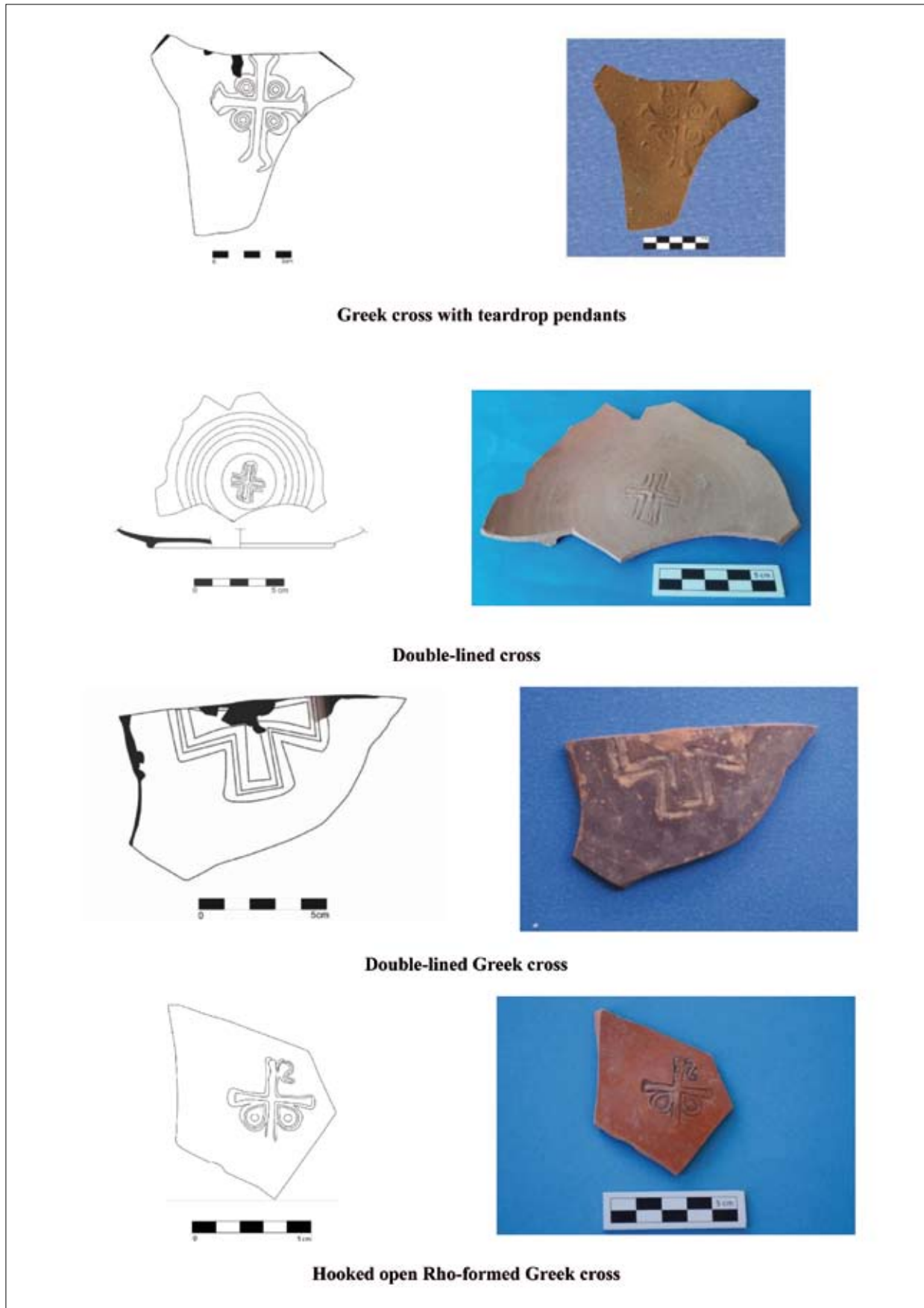


Fig. 12a. Main cross types on PRSW sherds (drawn by İ. Özelce, 2002).

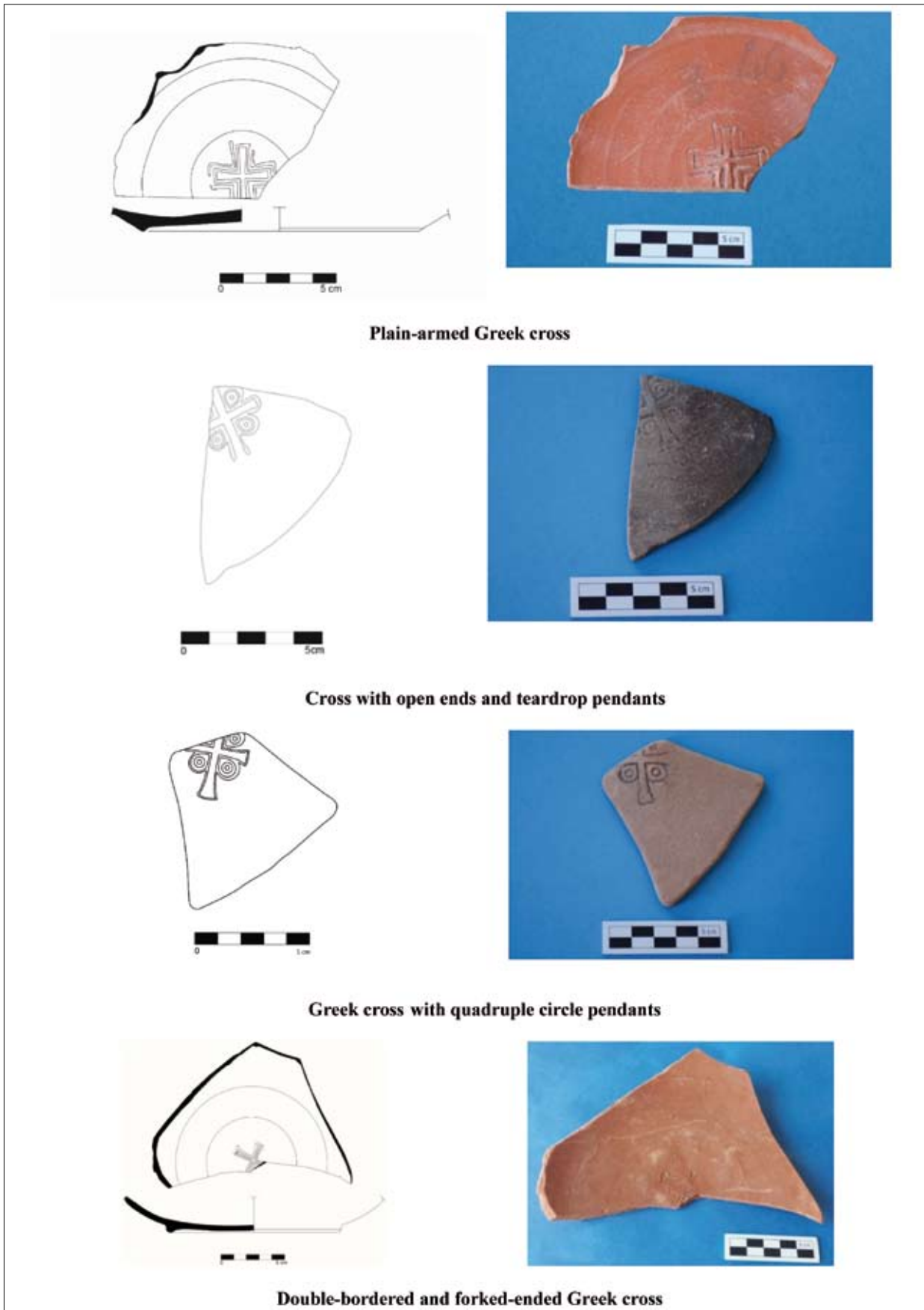


Fig. 12b. Main cross types on PRSW sherds (drawn by İ. Özelce, 2002).

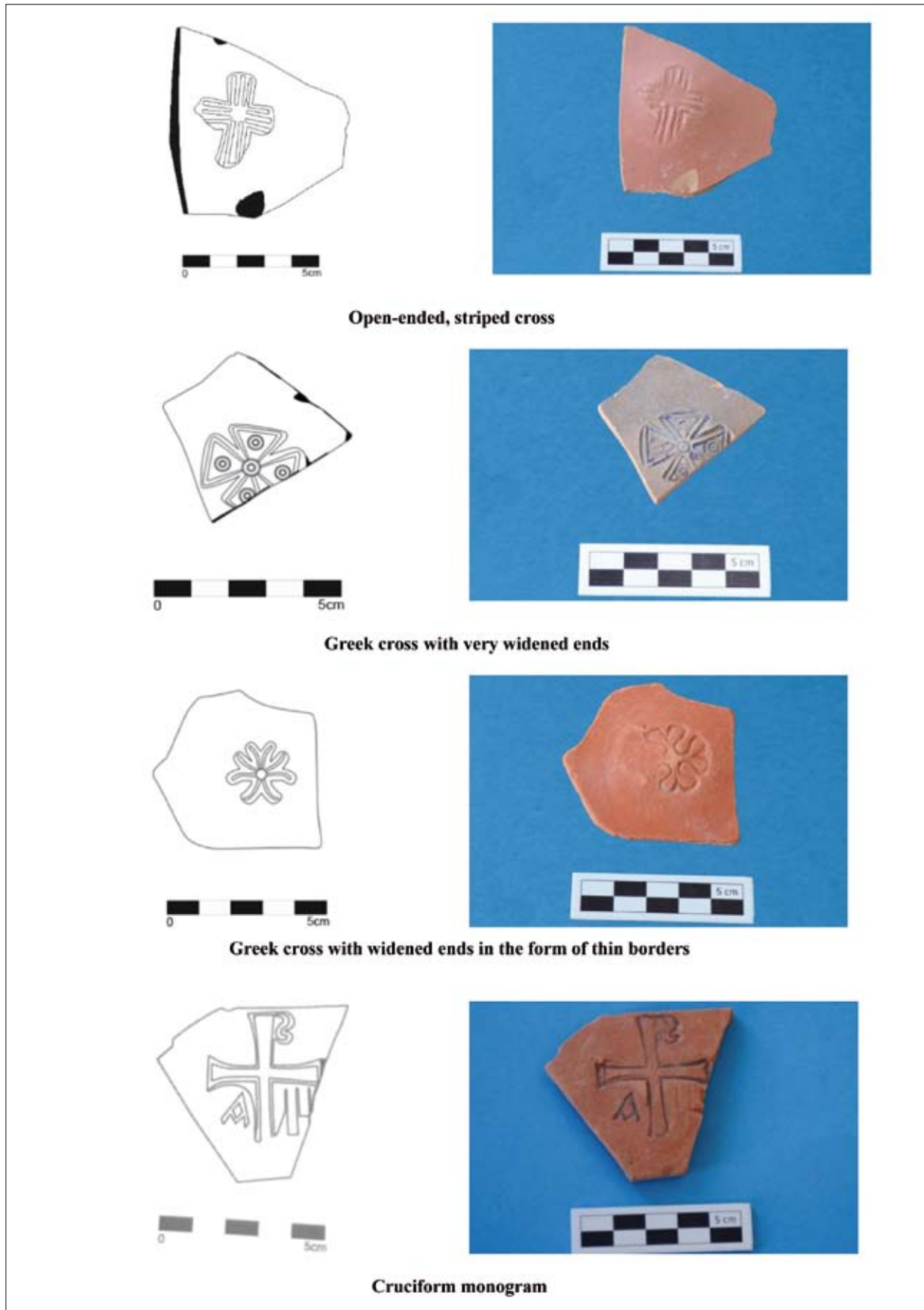


Fig. 12c. Main cross types on PRSW sherds (drawn by İ. Özelce, 2002).

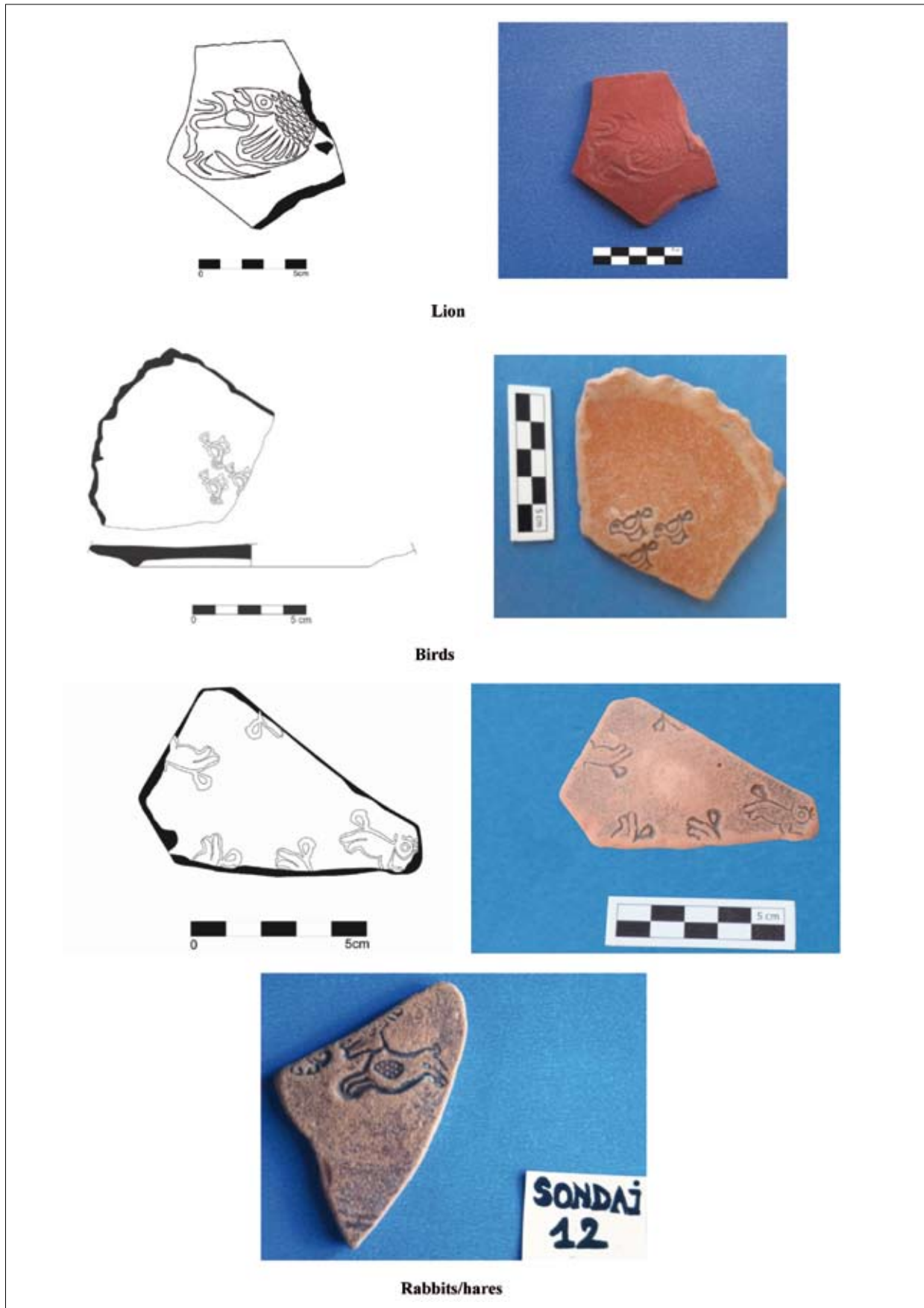


Fig. 13a. Other motifs and figures on PRSW sherds (drawn by İ. Özelce, 2002).

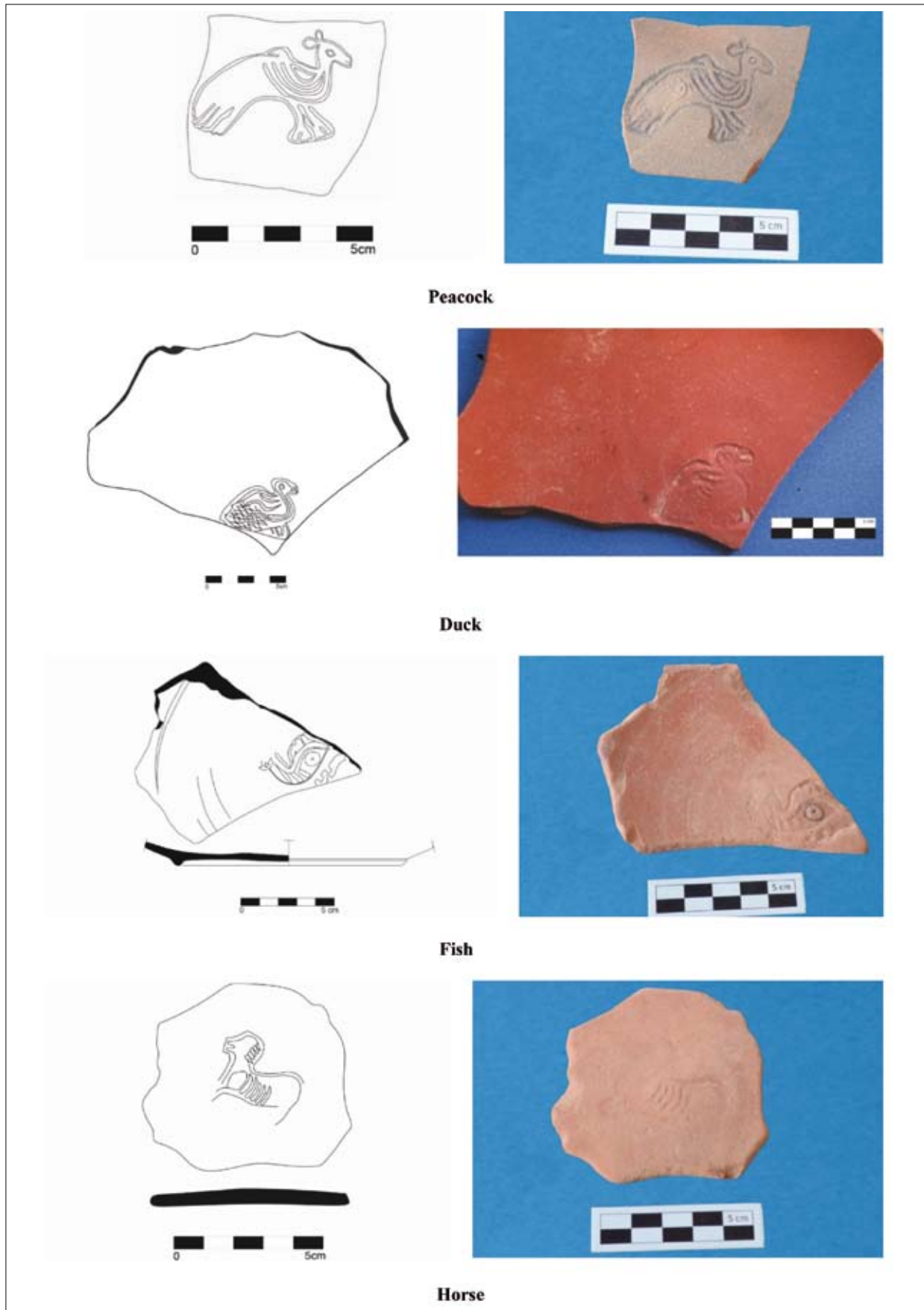


Fig. 13b. Other motifs and figures on PRSW sherds (drawn by İ. Özelce, 2002).

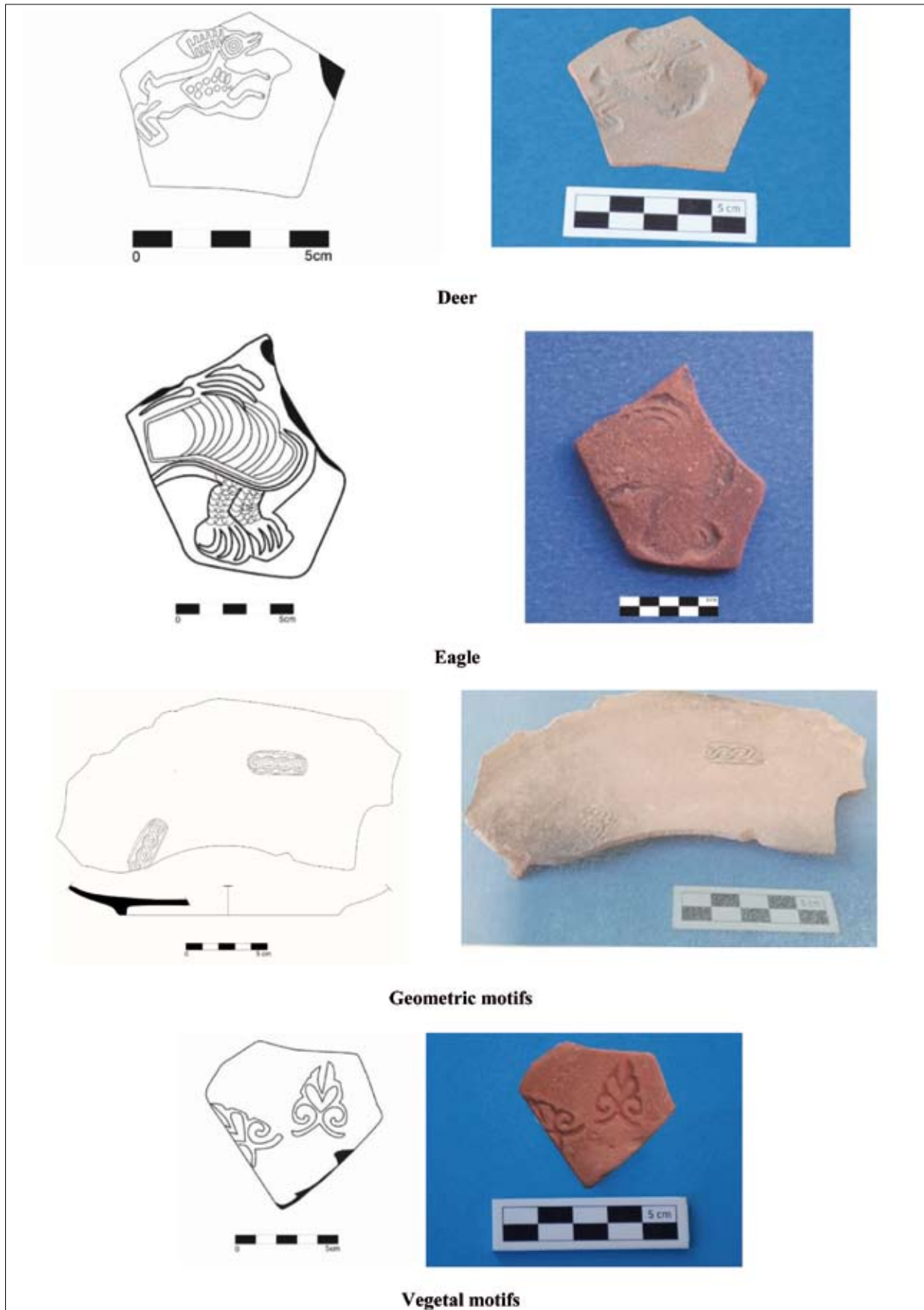


Fig. 13c. Other motifs and figures on PRSW sherds (drawn by İ. Özelce, 2002).

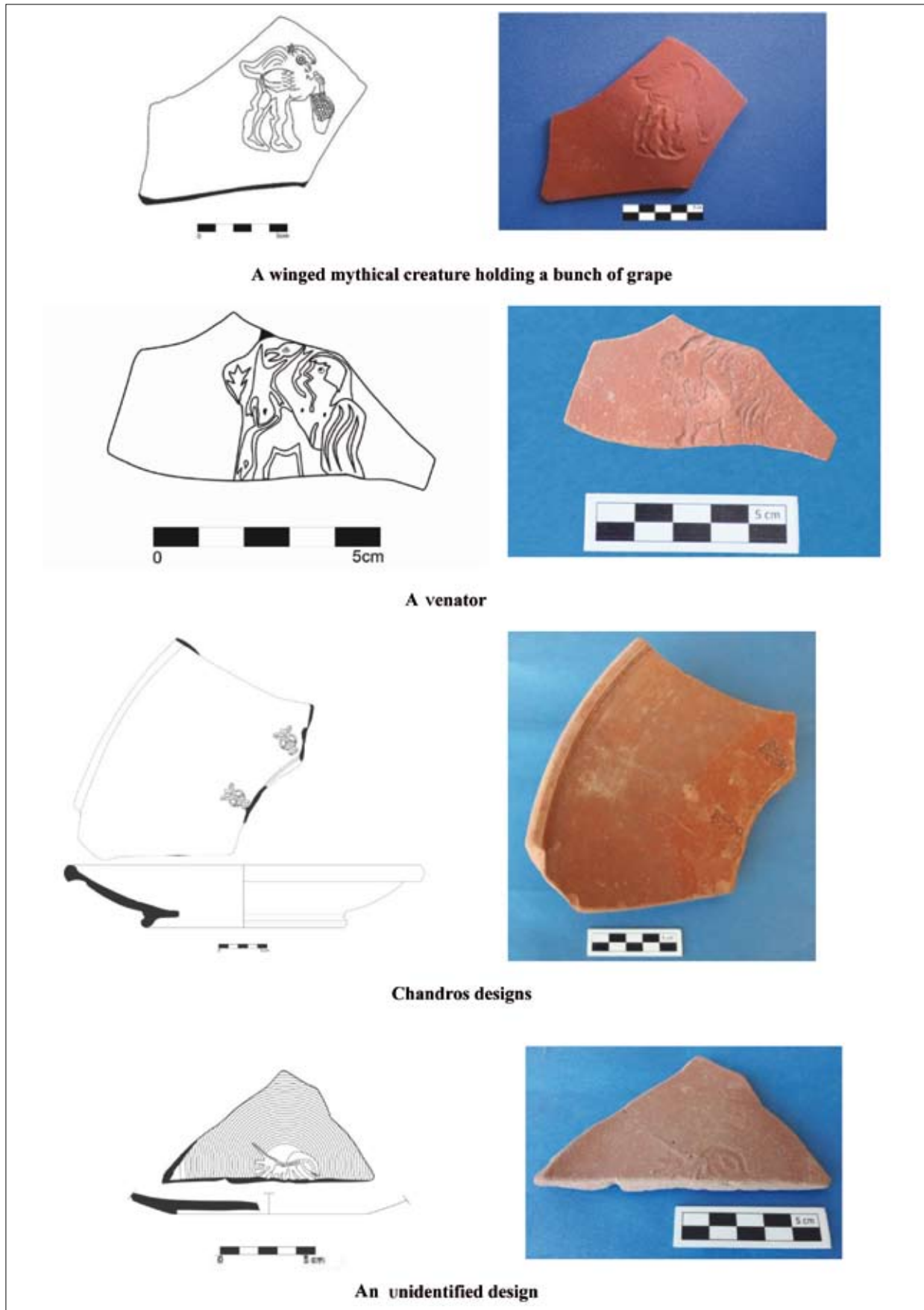


Fig. 13d. Other motifs and figures on PRSW sherds (drawn by İ. Özelce, 2002).



Fig. 14. Potter's discs from Küçük Deniz (photo. İ. Özelce, 2002).

examined in our study, as well as the materials recovered from the test excavations carried out in Phocaea, no moulds presumed to have been used for producing such vessels were encountered. In addition to the absence of moulds, the significant number of potter's discs among the material we examined indicates with certainty that the vessels were produced on the wheel (fig. 14). Thus, we believe that most pottery in Phocaea was manufactured in specialized workshops, using fast mechanical wheels and fired in carefully constructed kiln chambers, i.e., specialized furnaces.

As mentioned above, PRSW sherds from Phocaea generally have smooth inner and outer surfaces. To achieve this smoothness, potters must have used a spatula-like tool or a brush to smooth the vessel while it was still on the wheel. In addition, since Phocaea was a coastal site and the Phocaeans were seafarers, it is plausible that they may have used sponges during the smoothing phase. We also assume that the dipping method was employed for applying the slip to the vessels.

Apart from rim/body and base/body sherds, numerous kiln slags, vessel wasters, chunks of kiln lining, and various firing

defects were found in Küçük Deniz area (figs 15a-c). From the burnt material and faulty productions, it is understood that vessels, once shaped on the wheel and lined, were stacked in the kiln with their rims placed on top of each other during firing. This method meant that pots were piled inside the kiln, exposing only the rims to the gases, and resulting in characteristic surface discolourations.

The firing temperature of the examined sherds indicates that almost all the vessels were subjected to a maximum temperature of ca. 1000°C. The Phocaean potters must have used olive wood, vine branches, fig, mulberry, and oak – vegetation common in Foça – to light the fire in the kiln and maintain the heat. Since these vessels were fired by stacking, the rims came into greater contact with the hot air in the kiln chamber. Consequently, many examples display darker tones, such as reddish brown, brownish gray, gray, and reddish black, particularly on their rims.

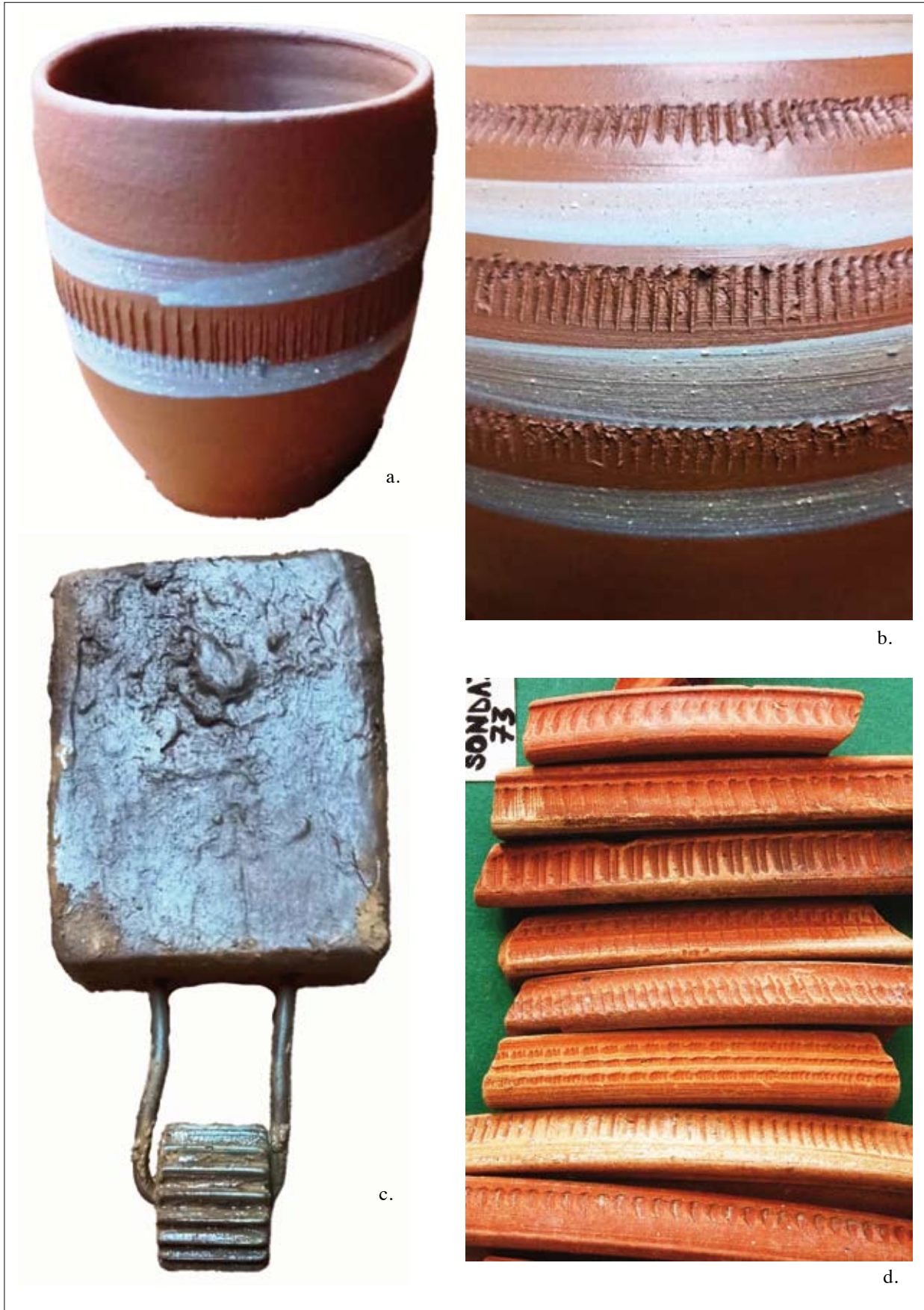
The roulette prints on the rim surface of PRSW (fig. 16d) can also be observed in present-day Karacasu pottery, located ca. 270 km southeast of Foça. Pottery has been produced there since the Neolithic period and continues to this day. The decoration executed with this method is referred to as “tır tır” decoration in Karacasu pottery³⁵ (figs 16a-c). Among the ornaments on PRSW tondos are grooves, incisions, roulette bands, and roulette-printed motifs (including single-row, double-row, and triple-row lines, crescents, circles, triangles, inverted triangles, and dots). In addition, ornaments bordered by grooves or concentric circles were applied both to the tondos and around the vessels.

7. CERAMIC KILNS AND WORKSHOPS IN PHOCAEA

In Phocaea, block 1168 of the land parcel registry map and its surroundings in the Atatürk district have generally been considered a “potter's quarter” during the Roman period. Within the fieldwork carried out by Professor Özyiğit and the Directorate of the Museum of Izmir between 1989 and 2016, several pottery waste dumps, kiln chambers (mostly oval-shaped; fig. 17), and workshop



Figs 15a-c. Fragments of kiln slabs, vessel wasters, chunks of kiln lining and various firing defects from Küçük Deniz, test trenches 59 and 14 (photo. İ. Özelce, 2002).



Figs 16. a-c. “Tır tır” decoration on present-day Karacasu pottery and its shaping tool (photo. İ. Özelce, 2025); d. Roulette decorations on various PRSW sherds from Küçük Deniz, test trench 73 (photo. İ. Özelce, 2002).



Fig. 17. An oval-shaped kiln chamber excavated in İsmetpaşa district, located next to the government office of Foça (photo. İ. Özelce, 2025).



Map 3. Main PRSW waste dumping, kiln and workshop areas in Phocaea, Eski Foça (drawn by F. H. Kaya, 2025, based on ÖZYİĞİT 2017, pp. 38-44; UĞUZ YAPICI 2024, p. 33, table 1; UĞUZ 2024, p. 5, fig. 2; FIRAT 2024, particularly 83, fig. 1, 85, fig. 5; and CİVELEK 2021, pp. 46-47, 60, fig. 3). Legend for findspots (numbers given according to table 3): 1. Küçük Deniz, 2. Mosaic floor, 3. Çifte Kayalar, 4. Karacina, 5. Fevzipaşa district, 6-9. Temple of Athena, 10. Atatürk district, 13 block, 106 plot, 11. Atatürk district, 1204 block, 3 plot, 12. Cape of Büyük Deniz Lighthouse, 16 block, 226 plot, 13. Near Cape of Büyük Deniz Lighthouse, 1219 block, 8 plot.

areas of PRSW and other related pottery were excavated in Phocaea. This industrial zone, covering at least 20-30 ha, is listed in table 3

below in geographical order, beginning with Küçük Deniz – our study area – in northern Phocaea ³⁶ (map 3):

Description	Characteristics	Location	Areal in the land parcel registry map	Find season	Reported pottery	Dating	References
Find number							
1	Waste dumping area of PRSW	İsmetpaşa district, Küçük Deniz coastal avenue, in front of residences nos. 108 and 106		2001-2002		Between the late fourth and early seventh cent. with majority of the fifth and mid-sixth cent.	ÖZYİĞİT 2003, 342-344; ÖZYİĞİT 2004, 444-447, 451-452, figs 5-12; CİVELEK 2021; ÖZELCE 2022; ÖZELCE, LAFLI, BUORA 2023; ÖZELCE, LAFLI, BUORA 2024; SEMİZ in progress
2	Waste dumping area of “terra sigillata”	İsmetpaşa district, Street no. 180, “Centre (?) of the ancient site”, on a mosaic floor of the pre-third cent.		1996		Sixth cent.	CİVELEK 2021, 46, notes 32 and 34
3	Waste dumping sector of “terra sigillata” (or “Late Roman C”) on top of the third cent. coarse ware dumping area	İsmetpaşa district, west of Çifte Kayalar (literally “Double rocks”) Hill, at the intersection of the Street nos. 163 and 200, in the western trenches of Çöplük Hill next to the asphalt road	22 sector, 140 block and 1858 block, 9 plot (former 150 block, 62 plot)	1989-1990 (?)			CİVELEK 2021, 46, note 33; FIRAT 2024, 72-73, notes 2 and 7, 85, fig. 5, nos. 2-3; UŞLU 1994
4	Workshop and a kiln chamber of “Late Roman C”, converted from a former well in the fourth cent.	İsmetpaşa district, Karacina location, at the intersection of the Street nos. 272 and 274, excavated next to the government office of Foça	1056 block, 13 plot	2009-2011		Late Roman period, fourth cent. sherds on the floor of the well, fifth-sixth cent. sherds on upper layers, slags	CİVELEK 2021, 467, note 43; UĞUZ 2015
5	Waste dumping sector of “Late Roman C”, third cent. coarse ware dumping area	Fevzipaşa district, the big square at the intersection of the Street nos. 189 and 216, top layer		1992-1993 and 1995		Sixth cent.	CİVELEK 2021, 467, note 47; FIRAT 2024, 85, fig. 5, nos. 2-3
6	Kiln chamber of “terra sigillata”	Atatürk district, Temple of Athena ³⁷	1 block, 2 plot				CİVELEK 2021, 46, note 32

7	A domned kiln chamber and its dome; waste dumping area on the slopes	Atatürk district, Temple of Athena, in front of the western podium wall	1 block, 2 plot		"Terra sigillata"	Late Roman period	CİVELEK 2021, 46+47
8	Three kiln chambers of "terra sigillata"	Atatürk district, Temple of Athena, in the trench G9-H9 west of western podium wall, layer II A	1 block, 2 plot	2005-2007		Late Roman period	CİVELEK 2021, 467, notes 39-40
9	Kiln chamber and waste dumping area of "terra sigillata"	Atatürk district, Temple of Athena, in the trench H8 K8 adjacent to the city wall	1 block, 2 plot	2006		Late Roman period	CİVELEK 2021, 467, note 38
10	Workshop and waste dumping areas of "Phocaeen terra sigillata", a clay pool (?)	Atatürk district, on the corner between Poyraz Avenue and Street no. 11, public sewer connection	13 block, 106 plot	2004	Among coarse ware sherds, 275 sherds of red slip vessels were found, 216 of them were "PRSW" and dated between the first and seventh cent.	Roman Imperial and Late Roman periods	FIRAT 2011, 27-43; CİVELEK 2021, 47, note 42 FIRAT 2024, 75, note 24
11	Two pottery workshops and clay pool; waste dumping area of "Phocaeen red slip ware"	Atatürk district, on the corner between Street nos. 11 and 8	1204 block, 3 plot	2004	"Red slip ware"	Second-third and fourth-fifth cent.	CİVELEK 2021, 46, note 36; FIRAT 2024, 75
12		Atatürk district, Büyük Deniz Coastal Avenue, no. 87, close to Sevgi Avenue, near Cape of Büyük Deniz Lighthouse, connection area to the mainland	16 block, 226 plot	2002		Early sixth cent.	ÖZYİĞİT 2004, 443; CİVELEK 2021, 46, note 33, 47,
13	Waste dumping sector of "Late Roman C", third cent. coarse ware dumping area	Atatürk district, Street no. 21, no. 7, near Cape of Büyük Deniz Lighthouse	1219 block, 8 plot	2015-2016		"Terra sigillata" of the third-fifth cent.	UĞUZ 2024, 5-7, figs 3-4; UĞUZ YAPICI 2024; FIRAT 2024, 85, fig. 5, no. 12

Table 3. List of waste dumping, kiln chamber and workshop areas of PRSW and other related pottery excavated in Phocaea between 1989 and 2016 (based on ÖZYİĞİT 2017, pp. 38-44; UĞUZ YAPICI 2024, 33, table 1; UĞUZ 2024, p. 5, fig. 2; FIRAT 2024, particularly pp. 83, fig. 1, 85, fig. 5; and CİVELEK 2021, pp. 46-47, 60, fig. 3).

8. CONCLUSIONS

Examinations of the PRSW sherds from Küçük Deniz in Phocaea have identified several overlapping forms and have provided new knowledge on this widely exported ware of western Asia Minor. In any case, all of these pottery waste dumping, kiln and workshop areas excavated in Eski Foça indicate that Phocaea had an undoubtedly large pottery neighbourhood engaged in mass production of red slip tableware during the Late Roman period next to other contemporary production centres in Pitane, Smyrna, Ephesus, Pergamum, Cnidus and Tralles. However, there are still numerous questions about the organization of these productions (patrons and potters of these workshops, family workshops?, beginning and end of the output, reasons for the abrupt termination of the production etc).

Some stamped decoration on the sherds from Küçük Deniz presents a different variant of elements and a unique combination of figures and motifs. This uniqueness suggests that the ornaments, even though they appear repetitive and adhere to a set of general norms, were an element of choice by both the potters and the clients.

ACKNOWLEDGMENTS

The Directorate of the Museum of Izmir granted permission to publish the fragments on 7th of November 2023 under the number E-60760627-160.01.01-4391724 (signed by Mr Cengiz Topal, the former Deputy Director) and also by the Directorate of Museums and the Directorate of Culture and Tourism of Izmir on 7th of November 2023, with the number E-79172315-160.01.01-4399586 (signed by Mr Murat Karaçanta, the former Director).

Double-nichole views of 30 PRSW sherds from Küçük Deniz in Phocaea were taken under a polarizing microscope at the Laboratory of the Department of Geological Engineering at the Faculty of Engineering, DEU, in 2008, with the permit issued by the Directorate of the Museum of Izmir on 24th of December 2008.

Whenever possible, the geographical location of the sites mentioned is defined according to the official cadastral map of the

Turkish General Directorate of Land Registry and Cadastre, which can be consulted online at <<https://parselorgu.tkgm.gov.tr/>> (accessed on 1st of January 2025).

All the illustrations were drawn and photographs were made by İ. Özelce in 2002 and 2025.

Maps 1-3 are included by arrangement with Dr. Fatih Hakan Kaya (DEU) who draw them in 2025 and to whom we would like to express our sincere gratitude and appreciation.

For general inspiration, advice and various contributions we thank Mrs Fatma Başçıl (DEU).

Acknowledgments are due also to (in alphabetical order) Professor Erwin Pochmarski (Graz) and Professor Hugo Thoen (Deinze / Ghent), who kindly read a draft of the paper and shared their comments.

NOTES

- ¹ This ware is also known in some other publications as PhRSW or Phocaeen Late Roman C abbreviated as Phocaea LRC.
- ² For PRSW excavated in Phocaea, cf., e.g., CIVELEK 2021; and ÖZELCE 2022; for “sigillata” from Phocaea, cf. USLU 1994, UĞUZ 2015 and UĞUZ YAPICI 2024. The past 20 years have been an especially productive period for research on ceramic finds in Phocaea, much of it by young scholars who have written catalogues of these finds in their graduate theses: for the excavation results related to other pottery groups in Phocaea, e.g., for Hellenistic pottery, cf. CIVELEK 2006; for Early Hellenistic pottery from Maltepe Tumulus, SAYGINER 2019; for Hellenistic mould-made relief (“Megarian”) bowls from Maltepe Tumulus in 1992 which were locally produced in the second-first cent. BC, cf. CIVELEK 1994 and 2004; for Early Roman cooking vessels, cf. AYDEMİR 1995; for coarse cooking vessels of the third cent. AD, cf. ÖZBÜTEV 1994; for Late Roman-Early Byzantine cooking vessels, cf. FIRAT 2011; for casseroles, cf. FIRAT 2012; for base forms, cf. FIRAT 2012; for frying pans, cf. FIRAT 2014; for lids of cooking ware, cf. UĞUZ 2024; for volute lamps (locally produced in mid-first cent. AD), cf. CIVELEK 2008; for trade amphorae, cf. OKAN 2003; OKAN 2011a; and ATILA, OKAN 2018 (Archaic period); OKAN 2011b (Lesbian amphorae); OKAN 2014 (Etruscan amphorae); OKAN, ATILA 2015 (stamped amphora handles excavated in the debris of

- Maltepe Tumulus); OKAN, ATILA, AKYOL 2015 (Chios-style amphorae); OKAN, ATILA, AKYOL 2018 (44 fragments of amphorae); FIRAT 2023 (amphorae from the second-third cent. AD); FIRAT 2019 (amphorae from the mosaic area); and SELÇUK 1998 (amphorae from the seasons 1992-1995); for Archaic-Classical Attic pottery, cf. TUNA-NÖRLING 2002; for the black glazed pottery, cf. DOĞAN 2013; and for the Archaic (Orientalizing) pottery workshop in the district of Atatürk, in the sector of the Cape of Büyük Deniz Lighthouse (section 6, 226 block), excavated in 2002, cf. ÖZYİĞİT 2003, pp. 443-444.
- ³ For the first season of the salvage excavations at Küçük Deniz in 2001, cf. ÖZYİĞİT 2003, pp. 342-344; and for the second season, cf. ÖZYİĞİT 2004, pp. 444-447, 451-452, figs 5-12.
 - ⁴ Literally "Little sea". In some publications this excavation sector is also reported as "Küçükdeniz".
 - ⁵ E.g., SARTIAUX 1914. For the exact location of the trenches excavated by Sartiaux in 1913-1920, cf. LANGLOTZ 1976, pp. 480-481.
 - ⁶ E.g., WAAGÉ 1933, pp. 279-328, pls. 8-10.
 - ⁷ E.g., LANGLOTZ 1969, pp. 379-381.
 - ⁸ E.g., HAYES 1972 pp., 323-370.
 - ⁹ EMPEREUR, PICON 1986 in which study both researchers dealt with pottery from several sites in Ionia and Aiolis, i.e., Phocaea, Kyme, Myrina, Gryneium, Elaea and Pitane.
 - ¹⁰ MAYET, PICON 1986. The paper discusses that the Western discoveries of PRSW demonstrate a fifth-sixth cent. maritime trade round the Iberian peninsula to the British Isles. With this paper the Phocaeian samples have been subjected to pXRF analysis for the first time.
 - ¹¹ E.g., ÖZYİĞİT 2017 and cf. note 37 below.
 - ¹² USLU 1994.
 - ¹³ VAAG 2001; VAAG 2003 and VAAG 2005.
 - ¹⁴ E.g., JAPP 2009, pp. 200, 202 (for NAA analysis), 206 (for RFA analysis), 266-267, Phok 1-6, fig. 39.
 - ¹⁵ UĞUZ 2015 deals with 217 "terra sigillata" sherds from İsmetpaşa district and identified ten main groups; and UĞUZ YAPICI 2024 examines 649 sherds, among others also "terra sigillata", of the third-fifth cent., found in Atatürk district, in the sector of the Cape of Büyük Deniz Lighthouse, on 1219 block, 8 plot of the land parcel registry map (most probably one the main pottery production centre in Roman Phocaea) in 2015 and 2016 seasons. However, at BES, KEWELOH-KALETTA 2024a, p. 277 it is assumed that there is no evidence that suggests Phocaea produced red slip tablewares during the Roman Imperial period (i.e., prior to PRSW), which implies that it only emerged as a significant new production centre for tablewares during the mid-fourth cent.
 - ¹⁶ E.g., CIVELEK 2021.
 - ¹⁷ BES, KEWELOH-KALETTA 2023 summarizes results of a recent survey which produced evidence for Late Roman C production not only in Phocaea, but also in Myrina, Elaea, Gryneium, Kyme and Pitane in Aiolis. Also cf., e.g., BES, KEWELOH-KALETTA 2024a, pp. 212-213, note 15, pp. 224, 246, 272-273, 277, 282-283; and BES, KEWELOH-KALETTA 2024b, p. 227, note 45.
 - ¹⁸ Dynamics of the PRSW's distribution has a complex nature, and it is a daunting task to study its distribution in various geographies in a holistic approach, by analyzing it in sociological and anthropological terms with its relationship to historical events as well as politics, economics and social changes of the period. There are hundreds of findspots in Turkey and nearby regions with dominating amount of PRSW sherds, for example, e.g., FRANCIS 2015, 74f notes that 114 fragments of PRSW were identified in the surveys in Cilicia in southern Turkey which are spread across 23 out of 69 sites, or 33%, with Roman material. For an actual map of distribution of the PRSW, cf., e.g., UĞUZ YAPICI 2024, 725, map 5. It seems that the distribution of PRSW in Anatolian sites is only limitedly known among other Mediterranean and European areas. Especially in Italy numerous findspots of PRSW as well as common ware produced in Phocaea are known: Archaeometric analyses conducted on some samples from the excavation of the former Pasqualis estate in Aquileia in north-eastern Italy have allowed to establish provenance of this group of pottery in the Phocaeian area, cf. MANDRUZZATO, TIUSSI, DEGRASSI 2000, p. 361. Other archaeometric analyses conducted on the common ware found in Ostia in central western Italy have allowed to identify two types of clay, likely originating from two distinct production centers. The clay rich in volcanic inclusions is thought to originate from the region of Phocaea, while the other one rich in schist crystals is thought to be related to Attica or the Aegean islands, cf. ISTENIĆ, SCHNEIDER 2000, p. 341.
 - ¹⁹ For the relationship between the pottery workshops of Çandarlı and Phocaea, cf. BES, KEWELOH-KALETTA 2023, pp. 343 and 345; BES, KEWELOH-KALETTA 2024a, pp. 246, 273, 282-283; and JAPP 2009, pp. 203, 210.
 - ²⁰ CIVELEK 2021.
 - ²¹ SEMİZ in progress.
 - ²² ÖZELCE 2022.
 - ²³ Cf. ÖZELCE, LAFLI, BUORA 2023 on rarely documented stamped decoration on PRSW from Küçük Deniz, and ÖZELCE, LAFLI, BUORA 2024 on stamped human depictions on the same find group.
 - ²⁴ This feature is determined at examined sherd nos. 1-4, 13 and 16.
 - ²⁵ This feature is determined at examined sherd nos. 5, 11, 15 and 18.
 - ²⁶ This feature is determined at examined sherd nos. 6-10, 12, 14, 17 and 19-30.
 - ²⁷ SARTIAUX 1914, pp. 11-14f and 38.
 - ²⁸ MAYET, PICON 1986, p. 133.
 - ²⁹ The concerned edition of Munsell is Munsell Soil Color Charts, New Windsor, NY, Macbeth Division of Kollmorgen Instruments Corporation, 1994 (revised edition) <<https://nishat2013.wordpress.com/wp-content/uploads/2013/11/munsell-soil-color-charts-book.pdf>> (accessed on 1st of January 2025).
 - ³⁰ HAYES 1972, pp. 325ff.
 - ³¹ In Phocaea the only complete vessels were found in burials, which are few in numbers, as most of the

graves, especially the Roman ones, had relatively modest grave goods. For the locations of necropolis areas in Phocaea, cf. ARICI 2020, p. 174, pl. 2.

³² HAYES 1972, pp. 323-324.

³³ VAAG 2003, p. 206.

³⁴ VAAG 2003, p. 205, note 19.

³⁵ On Karacasu pottery and “tır tır” decoration, cf. ALTINKILIÇ 2018, 3501, fig. 22 and 3502, fig. 26.

³⁶ General overview of the Phocaeen excavations between 1989 and 2020 have been amply presented in other studies, so we will not repeat those. Next to several field reports of Professor Ö. Özyiğit in “Kazı Sonuçları Toplantısı” (i.e., “Turkish annual meetings on the results of excavations undertaken in Turkey”) reporting about the pottery waste dumping, kiln chambers and workshop areas and other related on-site finds excavated in Phocaea during the campaigns of 1989 (published in 1991), 1990 (1992), 1991 (1993; pottery and lamp waste dumping area in the ancient theatre on the north-western slope of Değirmenli Tepe), 1992 (a fourth to second cent. BC waste dumping area in Maltepe Tumulus), 1994 (1996), 1995 (1997), 1996 (1998), 1998 (2000), 1999 (2001), 2004 (2006), 2005 (2007), 2006 (2008), 2007 (2009), 2008 (2010), 2009 (2011), 2011 (2013), 2015

(2017), 2016 (2018) and 2019 (2001-2022) (for a detailed list of references of these excavation seasons, cf. FIRAT 2024, p. 72, note 1 and 80-81), this list on table 3 is mostly compiled through ÖZYİĞİT 2017, pp. 38-44; UĞUZ YAPICI 2024, p. 33, table 1; UĞUZ 2024, p. 5, fig. 2; FIRAT 2024, particularly pp. 83, fig. 1, 85, fig. 5; and CİVELEK 2021, pp. 46-47, 60, fig. 3. Also cf. USLU 1994 (for “sigillata” production); FIRAT 2013 (for amphorae from the pottery waste dumping areas); and 2014 (for frying pans from the pottery waste dumping areas); CİVELEK 2008 (for a workshop of volute lamps of the mid-first cent. AD); and OKAN, FIRAT, BAYDAN 2018 (for an underwater pottery waste dumping area between the second and fourth cent., located in the district of Atatürk, on the Cape of Büyük Deniz Lighthouse, in the Çanak Bay, literally “Bowl” Bay). Such finds after 2017, e.g., new kiln chambers discovered in the area of Temple of Athena in 2023 or in Atatürk district, were not included here, as they remain as unpublished.

³⁷ The Temple of Athena, one of the very few remains of Antiquity at the site, is located on a flat rock platform with a commanding view of Phocaea and its bay, and was already mentioned by Xenophon (Hell. 13.1) and Pausanias (2.31.6; 7.5.4).

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