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VIII

PROCEEDINGS OF THE INTERNATIONAL COLLOQUIUMS FROM TÂRGU MUREŞ

Editor
SÁNDOR BERECKI

BRONZE AGE CHRONOLOGY IN THE CARPATHIAN BASIN

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The End of the Wietenberg Culture in the Light of new ^{14}C Dates and its Chronological Relation Towards the Noua Culture

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***Keywords*:** Bronze Age, Transylvania, radiocarbon dates, Wietenberg culture, Noua culture, Bronze Age Chronology, Carpathian Basin

The beginning of the MBA in the Transylvanian Basin is usually linked to the rise of the Wietenberg culture, which followed the decline of rusticated and textile-impressed ceramic groups (Roman 1986, 31–32; Ciugudean 1996, 145; Popa–Totoianu 2010, 104–105; Bălan 2014b, 27). Its development covers the whole MBA and the very beginning of the LBA and it has been divided into four phases, labelled I–IV in N. Chidioşan's system (Chidioşan 1980, 81–84) and A–D in N. Boroffka's chronology (Boroffka 1994, 246–254). The internal chronology for the Wietenberg culture was first developed by Chidioşan (1980) based on the ceramics and stratigraphy at the Derşida site. It should be noted, however, that the last phase was not registered in the depositional sequence of the Derşida site,[1] but was defined and added to the chronology based on the ceramic characteristics of several other sites.

The first official reference to "the late Wietenberg stage" was actually made by M. Rusu, who connected it with several sites, as well as hoards belonging to the Uriu-Domăneşti horizon (Rusu 1964, 246–247). D. Berciu has referred to a "phase IV", however, without analyzing its content (Berciu 1966, 193). T. Soroceanu was the next to contribute, drawing attention to the coexistence of Wietenberg finds and Noua, Suciu de Sus or Otomani III artefacts within several sites (Soroceanu–Istrate 1975, 25; Soroceanu 1973; Soroceanu–Retegan 1981, 206, notes 55–58). N. Chidioşan was the one to isolate a Wietenberg IV phase (missing from the Derşida site), which he defined on the basis of the elements identified by T. Soroceanu, and also of the successive wide stitches pattern (Chidioşan 1980, 81–84). I. Andriţoiu further analyzed the features of phase IV in south-western Transylvania, by highlighting the presence of new techniques and decorative patterns, as well as of late Otomani or "post-Otomani III" artefacts (Andriţoiu 1992, 53–54). On the basis of new research, N. Boroffka has also argued for a separate late Wietenberg phase (labelled as "D", according to his system), characterized by the "breite Absatzstich" technique (Boroffka 1994, 251).

The chronological framework for the evolution of the Wietenberg culture in Transylvania was based on the relative chronology that both N. Chidioşan and N. Boroffka developed in accordance with the central European chronological system for the Bronze Age. The Wietenberg chronological scheme was mostly supported by stratigraphic observations made on settlement sites (first of all Derşida), and on the typology of pottery and metal artefacts. The chronology was constructed based on relative dating due to

[1] This is the reason why the first periodization of the culture had only three phases, each corresponding to the main occupational levels at Derşida (see earlier works of Horedt 1967, 138–141 and Chidioşan 1968).

the complete lack of radiocarbon dates at the time when the two scholars elaborated their chronologies. N. Chidioşan and N. Boroffka agreed upon the extension of the late Wietenberg phase in the Reinecke Bronze D period (Chidioşan 1980, 83; Boroffka 1994, 283–284), a similar point of view being already supported by Soroceanu (Soroceanu–Istrate 1975, 25). However Fl. Gogâltan challenged this opinion and proposed an earlier start for the Wietenberg IV phase; in the Reinecke Bronze C period (Gogâltan *et al.* 1992, 12–13). A few years later Ciugudean did not extend the evolution of the Wietenberg culture beyond the end of Bronze C (Ciugudean 1997, 81; Ciugudean 1999, 130), an opinion recently shared by others as well (Popa–Totoianu 2010, 248, table 1; Bălan 2014b, 28).

The attempted replacement of the late Wietenberg phase with a new cultural group named "Bădeni III–Deva" (Rotea 1994) has been rejected by most archaeologists (Ciugudean 1997, 66–67; Ciugudean 1999, 108; Rustoiu 2000, 165–166; Bejinariu 2001, 24; Gogâltan 2001, 196–197; Gogâltan 2009, 119; Bălan 2014a, 43–44). More finds related to the late Wietenberg phase have been published from several sites in the Şimleu Depression (Bejinariu–Lakó 2000; Bejinariu *et al.* 2004)[2] and the Upper Mureş basin (Petică–Apai 2003; Berecki 2005). The distribution of the late Wietenberg sites on the right bank of the Middle Mureş valley has been highlighted both by Ciugudean (2010, 159–160, and fig. 1) and C. I. Popa (Popa–Totoianu 2010, 222).

More recently, Fl. Gogâltan has tried to define a new cultural synthesis between the Wietenberg IV and the Noua elements in central Transylvania, classified as "Gligoreşti-type discoveries" or "Gligoreşti group" (Gogâltan *et al.* 2004, 73–74; Gogâltan 2009, 119). While some archaeologists quickly accepted and used the new group (Popa–Totoianu 2010, 221; Popa–Râza 2009, 37), others have remained more cautious (Vasiliev 2005, 8; Ciugudean 2010, 158, 163).

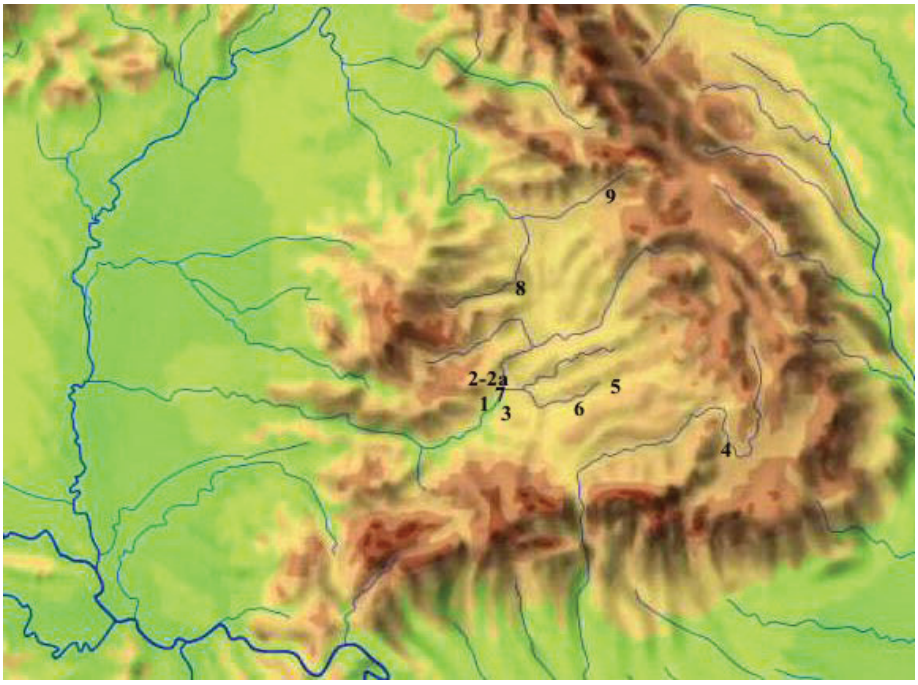

Fig. 1. Location of the Bronze Age Transylvanian sites with new radiocarbon dates: 1. Alba Iulia–*Recea (Monolit)*; 1a. Alba Iulia–*Bazinul Olimpic*; 2. Geoagiu de Sus–*Viile Satului*; 2a. Geoagiu de Sus–*Fântâna Mare;* 3. Sibişeni; 4. Rotbav–*La Părăuţ*; 5. Sighişoara–*Dealul Viilor*; 6. Valea Viilor; 7. Teiuş–*Fântâna Viilor*; 8. Floreşti–*Polus*; 9. Băile Figa.

One may easily notice that most attempts to define and date the late Wietenberg phase have focused on the evolution and comparison of ceramic decoration. The absolute chronological development of the MBA within Transylvania is still poorly understood (see Molnár–Nagy 2013, 12–13) because few radiocarbon dates have been published so far. Two dates have been known for a long time from the Wietenberg II site at Oarţa de Sus–*Ghiile Botii* (Kacsó 2004, 60; Görsdorf 2005). However, these dates seemingly contradict each other, even though both samples came from the same stratigraphical context (Kacsó 2011, 412).

[2] I. Bejinariu identified two levels – a lower late Wietenberg one and an upper one belonging to the Cehăluţ group in the Crasna site, but this stratigraphic interpretation has been deemed quite controversial among some researchers (Kacsó 2003, 84).

N. Boroffka published a radiocarbon date from a Wietenberg III complex (nr. 254) at Sighișoara–*Dealul viilor* (Popa–Boroffka 1996, 56; Baltag–Boroffka 1996, 386, footnote 39; Motzoi-Chicideanu 2004, 82, fig. 19) (Fig. 1/5). The 2 sigma calibration of the date (Bln–4622, 3330±51BP) places the pit (with Wietenberg C (III) and possible Noua elements) between 1742–1501 BC (Table 1; Fig. 2/c).

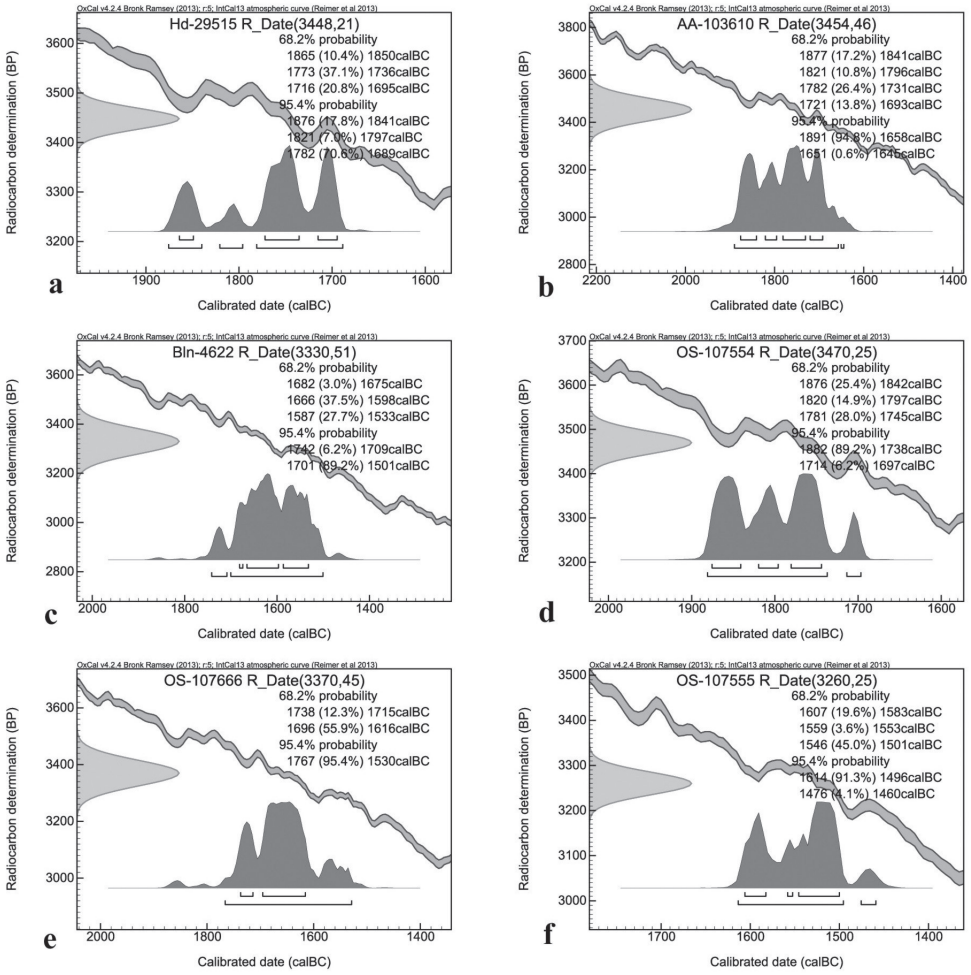

Fig. 2. Probability distribution of individual calibrated radiocarbon dates from: a. Alba Iulia–*Recea* (*Monolit*); b. Sibișeni; c. Sighișoara–*Dealul Viilor*; d. Geoagiu de Sus–*Viile Satului*; e. Geoagiu de Sus–*Viile Satului*; f. Geoagiu de Sus–*Viile Satului*.

Three additional dates have been recently published from the Wietenberg component at Rotbav–*La Părăuț* (Dietrich 2014a, 60–61, fig. 3–4) (Fig. 1/4). The earliest sample (Hd–28203) comes from the second occupation deposit (Rt. 2), which may be connected to the Wietenberg II (B) phase. The next two samples (Hd–27967, 3195±19 BP and Hd–27989, 3174±16 BP) come from the latest Wietenberg occupation at Rotbav (Rt. 3), which has typical Wietenberg III (C) decoration. The 2 sigma calibration of both dates indicates the 15th century BC (Table 1; Fig. 4) which also corresponds to the earliest Noua date from the same site (Table 2; Fig. 6), a fact that has been already noticed (Dietrich 2014a, 62).

New dates related to the Wietenberg culture have been recently provided within the frame of the project The Archaeological Atlas of Romania from the Palaeolithic to the year 1000 AD.[3] One sample (Hd–29515, 3448±21 BP) from the Wietenberg III (C) occupation at Alba Iulia–*Recea* (Fig. 1/1)[4] has been dated between 1876–1689 BC (Table 1; Fig. 2/a). This overlaps the calibrated range of the Sighișoara date (Fig. 4), so we might suppose the rise of the Wietenberg III phase already in the second half of the 18th century BC.

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[3] Grant PNCD II, the Programme ID 664. The samples were analyzed in the Heidelberg Akademie der Wissenschaften, Radiometrische Altersbestimmung von Wasser und Sedimenten, Dr. B. Kromer.

[4] For the archaeological contexts see Moga *et al.* 2005.

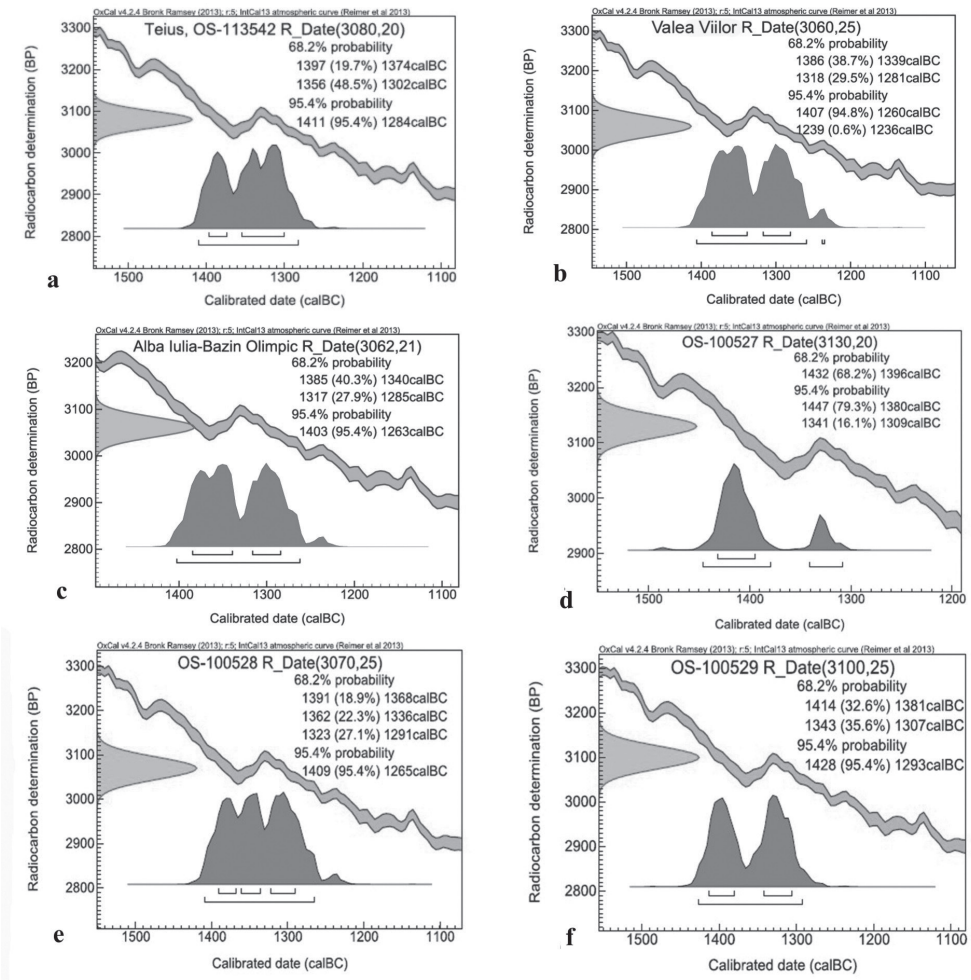

Fig. 3. Probability distribution of individual calibrated radiocarbon dates from: a. Teiuş–*Fântâna Viilor*; b. Valea Viilor; c. Alba Iulia–*Bazinul Olimpic*; d. Geoagiu de Sus–*Fântâna Mare*; e. Geoagiu de Sus–*Fântâna Mare*; f. Geoagiu de Sus–*Fântâna Mare*.

Lab.no.	Date BP	Cal BC	Sample material	Provenance	Chronological phase, horizon
Hd–29515	3448±21	1865–1695 (68.2%) 1876–1689 (95.4%)	animal bone	Alba Iulia–*Recea*	Wietenberg III
AA–103610	3454±46	1877–1693 (68.3%) 1891–1645 (95.4%)	cremated human bone	Sibişeni	Wietenberg III
Bln–4622	3330±51	1682–1533 (68.2%) 1742–1501 (95.4%)	charcoal	Sighişoara–*Dealul Viilor*	Wietenberg III
OS–107554	3470±25	1876–1745 (68.2%) 1882–1697 (95.4%)	charcoal	Geoagiu de Sus–*Viile Satului*	Wietenberg III/IV
OS–107666	3370±45	1738–1616 (68.2%) 1767–1530 (95.4%)	charcoal	Geoagiu de Sus–*Viile Satului*	Wietenberg III/IV
OS–107555	3260±25	1607–1501 (68.2%) 1614–1460 (95.4%)	charcoal	Geoagiu de Sus–*Viile Satului*	Wietenberg IV
Hd–27967	3195±19	1497–1442 (68.2%) 1501–1430 (95.4%)	animal bone	Rotbav–*Părăuţ*, Rt. 3	Wietenberg III (?)
Hd–27989	3174±16	1493–1427 (68.2%) 1497–1416 (95.4%)	animal bone	Rotbav–*Părăuţ*, Rt. 3	Wietenberg III (?)

Table 1. Radiocarbon dates from different Wietenberg sites (calibration OxCal v4.2.4).

Another new date related to the Wietenberg III phase came from the Sibişeni cemetery (Boroffka 1994, 75, nr. 389; Paul 1995, 164–197; Motzoi-Chicideanu 2011, 533–536) (Fig. 1/3). The sample

(AA–103610, 3454±46 BP) consisted of human cremated bone and it has been analyzed within the frame of the Bronze Age Transylvania Survey (BATS) project.[5] The 2 sigma calibration of the date places the Sibişeni grave between 1891–1645 BC (Table 1; Fig. 2/b), almost in the same limits as the sample from Alba Iulia–*Recea* (Fig. 4).

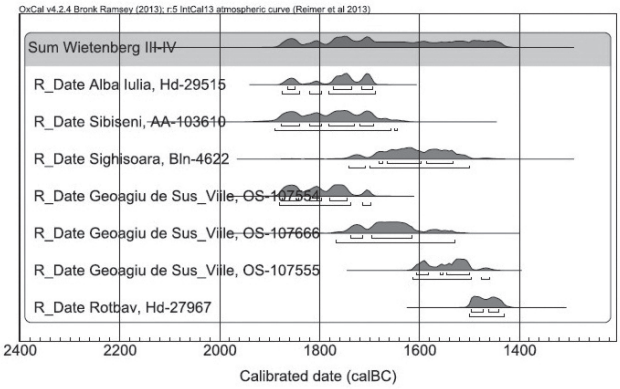

Fig. 4. Diagram showing probability distribution of radiocarbon dates from Wietenberg sites – phase/type III (C) and IV (D).

During the 2012 and 2013 field seasons of the Bronze Age Transylvania Survey (BATS) project, several small units were excavated in two Wietenberg sites at Geoagiu de Sus–*Viile Satului*[6] and *Fântâna Mare*[7] (Fig. 1/2–2a; Pl. 4/A–B). Part of a bell shaped pit was found in units 2 and 3 at Geoagiu de Sus–*Viile Satului*, and three samples of charcoal were selected to date the different deposits of the pit fill (Pl. 5).[8] The sample OS–107666 from the upper fill (Level 6) was dated between 1767–1530 BC (Table 1; Fig. 2/e), while the sample OS–107554 from the lower fill (Level 7) was dated between 1882–1697 BC (Table 1; Fig. 2/d). The sample OS–107555 belongs to the lowest pit fill (Level 9) and it was dated between 1614–1460 BC (Table 1; Fig. 2/f). The early date of OS–107554 might be the consequence of the "old wood effect", so we shall leave this date apart from our discussion.

The ceramics found in the Geoagiu de Sus–*Viile Satului* pit (Pl. 6–8) are mostly decorated with Wietenberg III (C) patterns (e.g. stippling technique/*Zahnstempelung*) (Pl. 6/6–7; 7/3, 6, 13) but there are later elements as well. There are narrow bands with successive impressions (Pl. 6/2–3; 7/3; 8/8), and more importantly, there are wide geometric areas of decoration that are roughened for the application of lime plaster (Pl. 6/1; 7/2), similar to the ones discovered in the ritual pit in 1994 (Pl. 9/4, 9, 11). The wide stiches technique *(breite Absatzstich)* is dominant on Wietenberg bowls and jugs from the 1994 pit (Pl. 9/2, 4–6, 8–11), associated with a few Suciu de Sus/Cehăluţ "imports" (Ciugudean 1997, 77; Ciugudean 1999, 128; Kacsó 2007, 46, 54). One should keep in mind however that similar two-handled storage vessels decorated with knobs and spirals (Pl. 9/1) are also present in the Koszider period Level 2 at Túrkeve–*Terehalom* (Csányi–Tárnoki 2013, fig. 9/4), in the fountain at Nagyrozvágy (Koós 2009, pl. 3/4) or in the tell of Carei–*Bobald* (Németi–Molnár 2007, pl. 78, 96). The last parallel came from the G6 complex, which is dated to phase IIIb of the Otomani culture (Németi–Molnár 2007, 134). Level 2 at Túrkeve–*Terehalom* also belongs to classical Gyulavársand/Otomani period (Csányi–Tárnoki 2013, 713). The Koszider period in Hungary has been recently reconsidered but its absolute chronology remains somewhat uncertain. However, most radiocarbon dates place the period between ca. 1700–1500 BC (Gogâltan 1999, 67, 76–78; Fischl *et al.* 2013, 357–358, fig. 6).

Based solely on ceramics, the pit excavated in Units 2 and 3/2013 is probably earlier than the one discovered in 1994.[9] It might be related to the Wietenberg III/IV transition or to the early IVth phase. The sample dating the early fill events, closer to the time in which the pit was dug and used (OS–107555, 3260±25) points towards the construction in the 16th century BC (Fig. 4).

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5 This project is a partnership between the University of Michigan Museum of Anthropological Archaeology, USA (C. Quinn and Dr. J. O'Shea) and the Muzeul National al Unirii-Alba Iulia, Romania (Dr. H. Ciugudean). The project is designed to improve the understanding of the Bronze Age in Transylvania by developing a radiocarbon based chronology. Funding was provided by the National Science Foundation (BCS-1341329) and the Wenner-Gren Foundation (Dissertation Fieldwork Grant 8655). The sample from Sibişeni was processed at the University of Arizona AMS Laboratory in Tucson, Az, USA.

6 The site was already known since 1994, when part of a ritual pit was recovered (Ciugudean 1997, 70–73; Ciugudean 1999, 110–116, fig. 8–14).

7 Popa (2005, 166, nr. 24) published rusticated ceramics from this site, but he used the name *La Craia*, according to private information from the villagers.

8 The samples were submitted to the National Ocean Sciences Accelerator Mass Spectrometry (NOSAMS) facility in Woods Hole, MA, USA. Funding for the radiocarbon analysis was provided by the National Science Foundation (BCS-1341329) and the Wenner-Gren Foundation (Dissertation Fieldwork Grant 8655).

9 Not a single sherd decorated in the stippling technique (*Zahnstempelung*) has been found in the rich ceramic offering, a fact hard to be explained just in terms of selective deposition.

Lab.no.	Date BP	Cal BC	Sample material	Provenance	Chronological phase, horizon
Hd–28276	3196±30	1497–1441 (68.2%) 1518–1415 (95.4%)	animal bone	Rotbav–*La Părăuţ*, Rt. 4	Noua
Hd–27972	3085±23	1405–1303 (68.2%) 1415–1282 (95.4%)	animal bone	Rotbav–*La Părăuţ*, Rt. 4	Noua
Hd–28321	2994±19	1264–1208 (68.2%) 1284–1128 (95.4%)	animal bone	Rotbav–*La Părăuţ*, Rt. 5	Noua
OS–108807	3060±25	1386–1281 (68.2%) 1407–1236 (95.4%)	human bone	Valea Viilor	Noua
OS–113542	3080±20	1397–1302 (68.2%) 1411–1284 (95.4%)	charcoal	Teiuş–*Fântâna Viilor*	Noua (?)
Hd–29183	3062±21	1385–1285 (68.2%) 1403–1263 (95.4%)	animal bone	Alba Iulia–*Bazinul olimpic*	LBA/ Noua (?)
OS–100529	3100±25	1414–1307 (68.2%) 1428–1293 (95.4%)	wood charcoal	Geoagiu de Sus –*Fântâna Mare*	LBA
OS–100528	3070±25	1391–1291 (68.2%) 1409–1265 (95.4%)	wood charcoal	Geoagiu de Sus –*Fântâna Mare*	LBA
OS–100527	3130±20	1432–1396 (68.2%) 1447–1309 (95.4%)	wood charcoal	Geoagiu de Sus –*Fântâna Mare*	LBA

Table 2. Radiocarbon dates from different LBA sites (calibration OxCal v4.2.4).

Five samples were run from the Bronze Age site at Geoagiu de Sus–*Fântâna Mare* (Pl. 4/A2, B2). Within Unit 3 there were six stratigraphic levels (Pl. 10), and excepting for the plowzone (Level 1), all the other levels have been dated.[10] Level 6 is the occupation level associated with EBA ceramics, while level 5 is a MBA occupation level with early Wietenberg (I/A) ceramics. Levels 4, 3, and 2 are all LBA levels and produced dates of 3100 ± 25 BP (OS–100529), 3070 ± 25 BP (OS–100528), and 3130 ± 20 BP (OS–100527) respectively. The 2 sigma calibration of the samples from Levels 2–4 places the LBA occupation at *Fântâna Mare* between 1447–1265 cal BC (Table 2; Fig. 3/d–f; 5). The finds include typical LBA elements such as the broom stroked (*Besenstrich*) ceramics in Level 2 and 3 (Pl. 11/2; 12/7, 9), rims with finger impressions (Pl. 11/1), as well as hatched triangles combined with rows of small impressions (Pl. 11/9) in Level 2. There are also Wietenberg III/Type C sherds (Pl. 11/4; 12/1, 4; 13/2, 5), and there is at least one Wietenberg IV/Type D fragment decorated with wide bands of successive impressions (Pl. 13/8). It should be stressed that the present remarks on the archaeological context are based on a single 1 × 1 m excavation unit (Unit 3/2012). This prevents us from definitively concluding the Wietenberg C type sherds are in situ and not the result of filling a possible LBA pit with earlier material in three distinct formation events. The dates have to be regarded more cautiously until a larger excavation is conducted in the same area of the *Fântâna Mare* site. Both dates from the Wietenberg final occupation at Rotbav seem to support the first hypothesis.

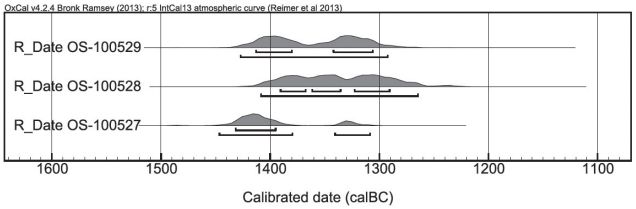

Fig. 5. Probability distribution of Geoagiu de Sus–*Fântâna Mare* radiocarbon dates.

The LBA occupation associated with Wietenberg Type C ceramics at *Fântâna Mare* site apparently contradicts the earlier dates of *Viile Satului* site. At the same time, the Geoagiu de Sus–*Fântâna Mare* samples fit quite well with the latest Wietenberg occupation (Phase III/C) at Rotbav, which fall in the 15th century BC (Fig. 4). Either the real context of the samples is not the one assumed by the excavators,[11] or we may have to rethink solely typology-based chronologies in the near future. The radiocarbon dates from the LBA cemetery at Câmpina point towards a much longer duration for the late Monteoru culture,

[10] The samples were submitted to the National Ocean Sciences Accelerator Mass Spectrometry (NOSAMS) facility in Woods Hole, MA, USA. Funding for the radiocarbon analysis was provided by the National Science Foundation (BCS-1341329) and the Wenner-Gren Foundation (Dissertation Fieldwork Grant 8655).

[11] We may have put unit 3/2012 right through a midden with three distinct formation events. In the absence of a larger horizontal excavation block, it is difficult to evaluate the spatial extension of LBA occupation at Geoagiu de Sus–*Fântâna Mare*. For a discussion of some methodological problems of radiocarbon dating see Palincaş 1997.

which received multiple influences from the neighbouring Noua and late Tei cultures (Frânculeasa 2014, 88–92). A much longer duration for the Wietenberg type C decoration has to be considered as well, its legacy being visible until the 14th century BC.

Other dates related to the Wietenberg IV phase came from the Miceşti–*Cigaş* site (Pl. 1/A3, B3), where several MBA and LBA features have been recently excavated (Bălan–Ota 2012; Bălan 2014). Fragments of human bone were recently selected to date the burials in C.7/2009 and C.11/2012 (Bălan–Quinn forthcoming; Bălan 2015 forthcoming). It should be noted that both Wietenberg III (C) and IV (D) ceramics were found, as well as Cehăluţ type shards (Pl. 16/1–5). For G. Bălan and C. P. Quinn, it was quite clear that the Wietenberg IV phase already started at Miceşti–*Cigaş* by the 17th century BC (Bălan–Quinn forthcoming). A typical Noua-type handle (Pl. 16/6) was recently found in the filling of a Gáva pit (complex 4/2015),[12] but its secondary position prevents the direct connection to the late Wietenberg occupation of the site. However, another possible Noua one-handled cup was previously found in the same site and regarded as a grave-good (Florescu 1991, 24, nr. 8, fig. 172/5), a rather questionable interpretation (Ciugudean 1999, 129, fig. 17/3).

The 18th–17th century radiocarbon dates are difficult to accept for the Wietenberg IV phase based on the current chronology. An aquatic reservoir effect might be suspected for the high dates of the Wietenberg human bone samples at Miceşti–*Cigaş* site. This reservoir effect could be present due to very plausible inclusion of aquatic resources from the River Mureş (and most probably Ampoi too) in the diets of the Bronze Age inhabitants. Reservoir correction may be needed for the Miceşti bone samples in the future, as they will probably make the ^{14}C age of these samples less precise but more accurate.

In order to better understand the end of the Wietenberg culture in terms of absolute chronology, we have to address the Noua expansion inside the Transylvanian basin. The issue concerning the relation between the Wietenberg and Noua cultures has been intensely debated. There has been a large group of scholars who promoted the coexistence between the two cultures (Florescu 1964, 196–198; Rusu 1964, 247–248; Horedt 1967, 139–141; Soroceanu 1973, 498–500, pl. XI; Soroceanu–Retegan 1981, 206; Andriţoiu 1992, 67–68; Andriţoiu–Vasiliev 1993, 128, 134; Gogâltan *et al.* 1992, pl. 13; Boroffka 1994, 275, 283–284, 288, map 58; Ciugudean 1997, 79–80; Ciugudean 2010, 159–161) with very limited opposition (Vulpe 1996, 40, note 20).

The exact timing of the Noua diffusion in Transylvania is far from being fixed, although several recent finds seem to point to an earlier arrival than previously thought. The excavations at Rotbav–*La Părăuţ* (Dietrich 2014b) showed that the evolution of the Wietenberg culture ceased towards the end of phase III (C) in southern Transylvania. There are three dates recently published from the Noua component at Rotbav (Dietrich 2014a, 61–62, fig. 3–4). The earliest sample (Hd–28276, 3196±30) comes from the lower deposit of the "ashmound" (Rt. 4), and it was dated between 1518–1415 BC (Table 2; Fig. 6). The 2 sigma calibration of the second date from the ashmound deposit (Hd–27972, 3085±23 BP) indicates the period between 1415–1282 BC (Table 2; Fig. 6). The sample (Hd–28321, 2994±19) from the upper Noua deposit (Rt. 5) is dated between 1284–1128 BC (Table 2; Fig. 6) and strongly supports the survival of the late Noua folks in south-east Transylvania at the beginning of HaA1 (Ciugudean 2010, 165–166 and note 182 with older bibliography). A sample from a human skeleton in the Noua cemetery at Floreşti–*Polus* (Rotea *et al.* 2008, 54–55) was recently dated ca 1200–1000 cal BC (Hervella *et al.* 2015, table 8), which might indicate that some Noua groups in Northern Transylvania lasted until the HaA period as well (Fig. 7).

In central Transylvania a new date related to the Noua culture comes from a grave (Fig. 1/6; Pl. 14) at Valea Viilor (Georgescu-Gonciar 2006). The sample (OS–108807, 3060±25BP)[13] was run on a fragment of long bone from an adult male and it has been analyzed within the BATS project.[14] The dating of bone collagen provides an accurate means of dating the death of the individual. Radiocarbon dates from bone collagen also are unaffected by the 'old wood' phenomenon that can affect conventional charcoal dates. The 2 sigma calibration of the date places the Valea Viilor grave between 1407–1236 BC (Table 2; Fig. 3/b), close to the limits of the sample Hd–27972 from Rotbav–*La Părăuţ* (Fig. 6).

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[12] The Noua sherd and the complementary information were kindly provided by dr. G. Bălan (Muzeul Naţional al Unirii, Alba Iulia).

[13] The sample was kindly provided by A. Georgescu from Brukenthal National Museum, Sibiu.

[14] Bone collagen extraction was conducted by N. Tuross, with the final sample processing conducted by the staff at the National Ocean Sciences Accelerator Mass Spectrometry (NOSAMS) facility in Woods Hole, MA, USA. Funding for the radiocarbon analysis was provided by the National Science Foundation (BCS-1341329) and the Wenner-Gren Foundation (Dissertation Fieldwork Grant 8655).

Another date which might be related to the Noua culture comes from the LBA settlement at Teiuş–*Fântâna Viilor* (Fig. 1/7).[15] This site is located next to the Noua cemetery excavated by Berciu and Popa at *Sub Drum* (Berciu–Popa 1965). The 2 sigma calibration of the charcoal sample (OS–113542, 3080±20 BP) places the pit between 1411–1284 BC (Table 2; Fig. 3/a), close to the limits of the sample from Valea Viilor grave. However, the ceramics associated with the charcoal sample in the small pit from Unit 1 at Teiuş–*Fântâna Viilor* (Pl. 15/1–7) do not exhibit typical Noua elements, except for a bowl with a tunnel-like handle (Pl. 15/2), which has parallels in the Noua cemetery at Teiuş–*Sub Drum* (Berciu–Popa 1965, 43–44, fig. 3/7), as well as in the Nicoleni site (Cavruc 1999, fig. 5/8). The black ceramics with strongly polished surfaces (Pl. 15/3, 6–7) show connections in the local Transylvanian BrD–HaA1 pottery.

The last date we would like to include in our analysis is related to some previously unpublished finds from the northern territory of Alba Iulia, close to the *Bazinul Olimpic* (Olympic swimming pool) building (Pl. 1/A2, B2). Two graves with skeletons in contracted position and a couple of pits were excavated here (Pl. 3/9).[16] No grave goods were discovered but one goat skeleton was found in a bell shaped pit (Pl. 3/8), together with a conical bowl (Pl. 3/1), a spindle-whorl (Pl. 3/6) and several sherds (Pl. 3/2–5). A fragment of goat bone was selected to date the LBA site at Alba Iulia–*Bazinul Olimpic* at the Heidelberg Laboratory in the frame of the Programme ID 664. The 2 sigma calibration of the radiocarbon date (Hd–29183, 3062±21 BP) places the pit between 1403–1263 BC (Table 2; Fig. 3/c). It is important to note that the Alba Iulia–*Bazinul Olimpic* site is located in close proximity to the Micești–*Cigaş* Bronze Age settlement (Pl. 1/A3, B3), where both Wietenberg phase III and IV are well-documented (Bălan 2014a). However, we have to stress that no typical Noua features can be detected in the pottery (Pl. 3/1–6). The bowl with double knobs on the rim has some parallels in the Koszider and Tumulus culture finds from Hungary (Vicze 2011, pl. 193/11; Vicze 2014, fig. 2/4, 10; Kovács 1975, pl. 9/93.2; 30/320; Ilon 2014, fig. 11/2, 3, 5). A LBA parallel for the spindle-whorl (Pl. 3/5) can be found at Şibot–*La Baltă* (Popa–Totoianu 2010, pl. 65/13). The impressions under the rim of the bowl from Bazinul Olimpic (Pl. 3/1) have parallels at Şibot–*La Baltă* (Popa–Totoianu 2010, pl. 64/8). At Vinerea–*Valea Grochilor* there is also a LBA site which contains a parallel (Popa 2011, pl. 113/7) for the finger-impressions around the bottom (Pl. 3/4). The relation between the two contracted burials and the ritual pit is not clear, but an association between pits with animal and ceramics offerings and human burials is not so unusual. Crouched skeletons are common in most of the Noua cemeteries, but the lack of grave goods in the Alba Iulia–*Bazinul Olimpic* burials prevents us from assigning such a cultural affiliation as an undisputed fact. The date from Pit 2 overlaps the ones from Valea Viilor, Rotbav (Hd–27972) and Teiuş (Fig. 6). Some of the dates at Câmpina cemetery, where Noua elements are visible in the ceramic offerings, are placed within the same time limits (Frânculeasa 2014, 90–91, 94–95).

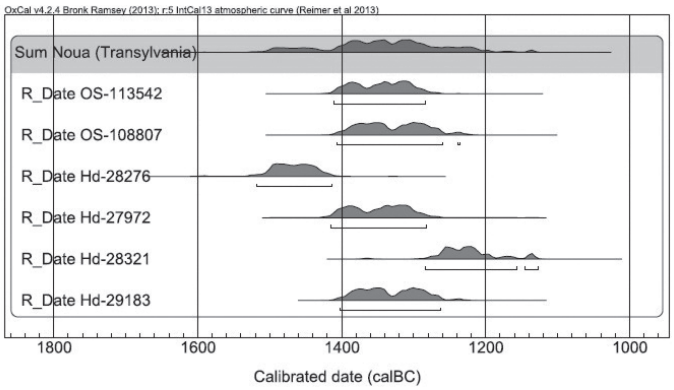

Fig. 6. Diagram showing probability distribution of radiocarbon dates from Noua related and other LBA sites in Transylvania.

Finally, we would like to add to our analysis several of the radiocarbon dates from Băile Figa site (Harding–Cavruc 2013, 116–129, table 4/2, fig. 4/57–58, 61). Several wood samples from the Băile Figa site point towards the 15th–13th century (Fig. 8), the same period indicated by the radiocarbon dates associated with the Noua culture in Transylvania so far (Fig. 6). Equally important, Noua ceramics were found in the area of the salt mines (Cavruc–Harding 2010, 195; Cavruc–Harding 2013, pl. 8/9). However, due to the few diagnostic ceramics and unclear connection between pottery and mining installations at Băile Figa, it is difficult to trace the exact time when Noua identity diminished and the control of the salt mining explotations in Eastern Transylvania has been taken over by the Gáva related groups.

The first contacts between late Wietenberg communities and Noua newcomers in Transylvania might have happened by the early 16th/late 15th century BC. The earliest Noua date from the Rotbav

[15] The site was located in the 2014 field season of the BATS project.

[16] The finds and the plan of the excavations were kindly provided by dr. G. T. Rustoiu, Muzeul Naţional al Unirii, Alba Iulia.

site (Table 2; Fig. 6) indicate that the Noua folks were already present by at least the 15th century in south-east Transylvania, and the Wietenberg evolution stopped in the form of phase III. It is probably at this time that the Noua-type cups (Pl. 16/6) appeared in the Miceşti–*Cigaş* (same as Alba Iulia–*Ijac*) site (Ciugudean 1997, fig. 15/3; Ciugudean 1999, fig. 17/3) and the Noua/Monteoru cups combined with the late Wietenberg bowl in the Band cremation graves (Popa–Boroffka 1996, 54, note 20). Even east of the Carpathians there are very few Noua calibrated dates that reach back to the 16th century BC, as it might be the case for the Crasnaleuca samples (Motzoi-Chicideanu–Gugiu 2004, 34, list 1, nr. 1–3). At the Miciurin–*Odaia* site, only one date out of 13 dates to prior than 1500 BC (Kaiser–Sava 2009, 152–158). The dates from the late Monteoru cemetery at Câmpina, where Tei and Noua elements are equally present, might be placed between the 15th and 12th century BC (Frînculeasa *et al.* 2013, 81–85). Earlier dates for the Noua culture outside the Carpathians (László 1993, 37, table 2; Motzoi-Chicideanu 2011, 265) have been challenged (Kaiser–Sava 2009, 158; Vulpe 2001, 285).

South of the Carpathians, both the radiocarbon dates from Câmpina – grave 20 (with Late Monteoru ceramic) and Popeşti–layer Br. II (Fundeni-Govora group) point towards the 15th century cal BC. One should keep in mind that a channelled bowl of Monteoru type with vertical groups of lines on the neck and one tunnel-like handle recently came to light at the Noua site from Cristian III in southern Transylvania (Luca 2012, 10–11, 130–135, fig. 17). It is a close parallel for the bowl found in grave 20 at Câmpina (Frînculeasa 2014, pl. 37/9) and for the type VIb found in the Monteoru IIb phase (Oancea 1981, 178 and fig. 23). This might also be a clue for the chronological position occupied by the Noua sites with Monteoru elements in southern Transylvania, such as Ţichindeal (Popa–Boroffka 1996, 53, fig. 6), Cătălina (Zaharia 1990, 37, fig. 3/3, 4), Cristian (Luca 2012, fig. 17) or Sartăş (Zaharia 1990, 37, fig. 3/6).

As a result, it seems reasonable to propose the terminus post-quem for the settling of the Noua communities in eastern Transylvania at ca. 1525/1500 cal BC (Fig. 6). The context and character of the "Noua elements" from the Wietenberg complex at Sighişoara–*Dealul Viilor* have to be reconsidered in the light of the new information as well.

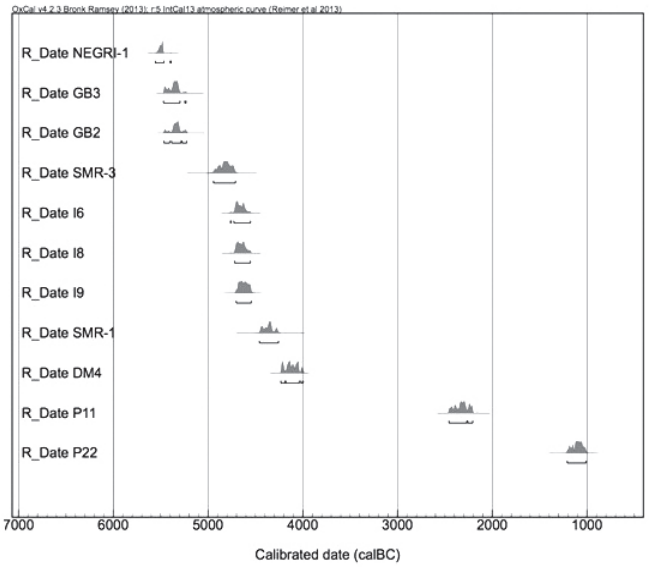

Fig. 7. Calibrated date (P22) from the Noua cemetery at Floreşti–*Polus* (after Hervella *et al.* 2015).

As for the late Wietenberg phase, the idea of a longer and more complex evolution has already been stated (Ciugudean 2010, 162–163; Popa–Totoianu 2010, 222). According to the finds known so far, the Geoagiu de Sus–*Viile Satului* site seems to illustrate both the transition between phases III–IV (C–D) and the "classical" IV (D) phase. The sample OS–107666 (3370±45 BP) collected from the upper deposits of the pit in Unit 3/2013 probably came from earlier occupation layers that were used to fill the pit. The sample OS–107555 (3260±25 BP) seems to match expectations, at least partially, for the phase IV; mainly the 16th century BC (Fig. 7).[17] It is important to underline the complete lack of Noua elements in the two pits excavated at Geoagiu de Sus–*Viile Satului*, which fits very well with dating the site before 1500 BC. If the survival of the late Wietenberg traditions is longer than expected,[18] there are two main options for handling this situation. Either we divide the Wietenberg IV (D) phase in more sub-phases (or even add a new final phase!),[19] or the

[17] The radiocarbon dates from two different features at the Vlaha–*Pad* site are also supporting this time span (Németh 2015; Gogâltan 2015 forthcoming).

[18] The Geoagiu de Sus–*Fântâna Mare* samples have to be regarded more cautiously until a larger excavation unit will be done in the same area of the *Fântâna Mare* site.

[19] This situation is rather similar to the evolution of Tei culture, initially divided by Leahu in five phases (Leahu 1966, 265–267; see also Schuster 2014), the last ones being later separated as the Govora (-Fundeni) group (Palincaş 1996, 257; Leahu 2003).

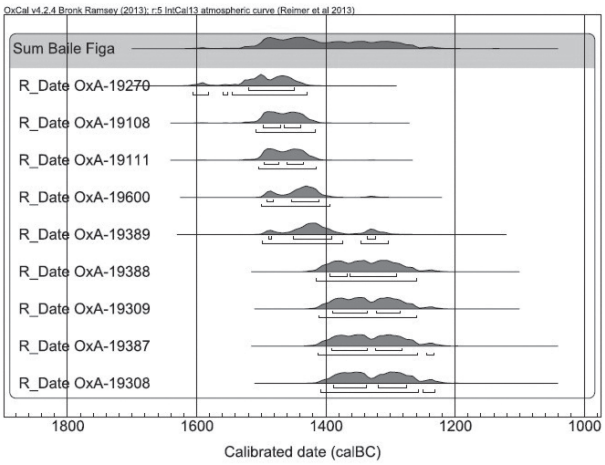

Fig. 8. Băile Figa. Sum of selected LBA calibrated dates.

existence of a separate group has to be accepted in central and western Transylvania.[20] However, looking south of the Carpathians, the recent excavation of the Câmpina cemetery supports the idea of a survival of the late Monteoru culture until the LBA. The mixture of late Monteoru culture with Noua and even Tei IV–V (Fundeni-Govora group) elements, well-documented in several sites (Motzoi-Chicideanu–Şandor-Chicideanu 1999, 65; Frînculeasa 2014, 99–103), looks like a similar phenomenon as the final evolution of the Wietenberg culture in Transylvania.

* * *

The new radiocarbon dates from late Wietenberg and Noua cultural contexts allow us, for the first time, to situate the trajectory of the Transylvanian MBA/LBA transition within the broader Carpathian macroregion. As a result, there are several important aspects; some in which the Transylvanian trajectory matches transformations seen across the macroregion and some that are unique to Transylvania.

The social and cultural transformations that occurred in Transylvania between the 16th and 15th centuries BC appear to by synchronous with the transition between the Middle and LBA in surrounding regions, including the Carpathian Basin. The transition between the Middle and LBA in the Carpathian Basin is marked by the replacement of ceramic cultural elements of local MBA cultural groups (e.g., Mureş, Vatya, Vatina, Otomani–Gyulavarsánd) with LBA traditions (see Duffy 2010; Jaeger–Kulcsár 2013; O'Shea 1991). Given the origin of the Noua culture (to the east and northeast of the Transylvanian Basin), the fact that social transformations occurred in both Transylvania and the Carpathian Basin (to the west) is likely significant – perhaps influenced by expanding long-distance interregional interaction (see Quinn–Ciugudean forthcoming). Salt trade might have been one major factor, as the start of exploitation of salt resources on large scale in Transylvania is radiocarbon dated to the 16th century cal BC (Harding–Cavruc 2010, 150–152, tab. 1, fig. 31).

The transition to the LBA in the Carpathian Basin is also concurrent with abandonment of large fortified settlements along rivers such as Pecica–*Sanţul Mare* (O'Shea *et al.* 2005; 2006; Nicodemus 2014) and Százhalombatta–*Földvár* (Jaeger–Kulcsar 2013; Uhnér 2010, 347–348) and a shift towards very large fortified settlement enclosures such as Sântana (Gogâltan–Sava 2010), Munar (Gogâltan–Sava 2010, 57–61), and Corneşti–*Iarcuri* (Szentmiklosi *et al.* 2011; O'Shea 2011). At this point, there is not enough information about late Wietenberg and Noua settlement patterns (though see Dietrich 2014b; Molnár–Nagy 2013) to tell if there is a similar shift in landscape use, demographic centralization, and economy in Transylvania.

Our understanding of the chronology, social organization, and interaction of the Wietenberg and Noua cultures are challenged with each new radiocarbon date. The recent increase in absolute dates from Bronze Age Romania (e.g. Dietrich 2014a; Frânculeasa *et al.* 2013; Motzoi-Chicideanu 2011; Frânculeasa 2014; Bălan–Quinn forthcoming) promises to challenge archaeologists to test, refine, and reorganize many of the chronological and social models that have been built on the existing relative ceramic chronology. With this study, we hope to further the discourse on the Wietenberg and Noua culture and anchor these discussions through scientific analyses of the archaeological data.

[20] Rotea (1994) made a first attempt with the Deva-Bădeni group. More recently Gogâltan came with a new proposal, the Gligoreşti-type finds (Gogâltan *et al.* 2004, 73–74; Gogâltan 2009, 119). This seems to be a more viable option, although it is still in a sketch stage, both the distribution and mainly the chronology are far from being clear. If one would like to date this group, the 15th and part of the 14th century is the most probable period so far. Pushing it towards the 13th century, or Reinecke Bronze D, as Fl. Gogâltan and C. I. Popa did (Gogâltan 2009, 121–123; Popa–Totoianu 2010, 248, table 1), is not supported by the existing calibrated ^{14}C dates, including the new one from Gligoreşti–*Holoame* (Gogâltan 2015 forthcoming).

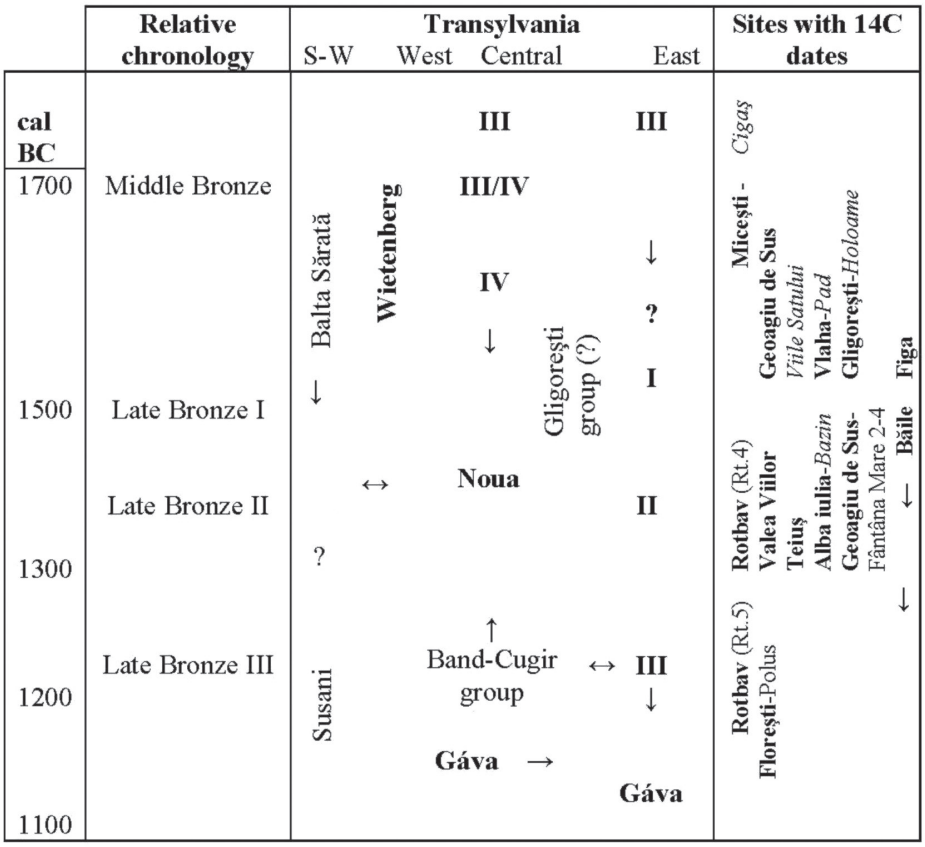

Fig. 9. Chronological table with MBA and LBA cultures/groups in Transylvania.

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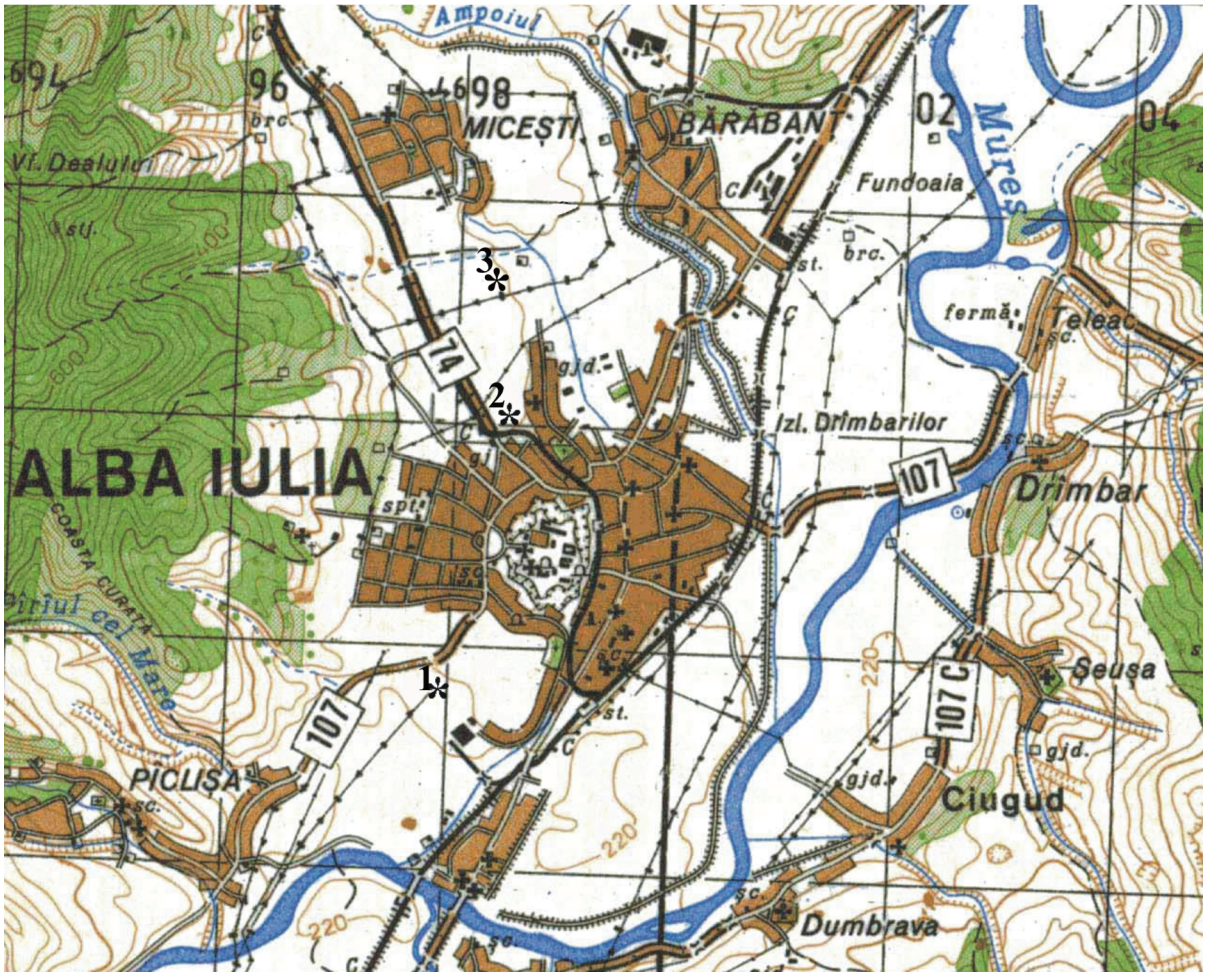

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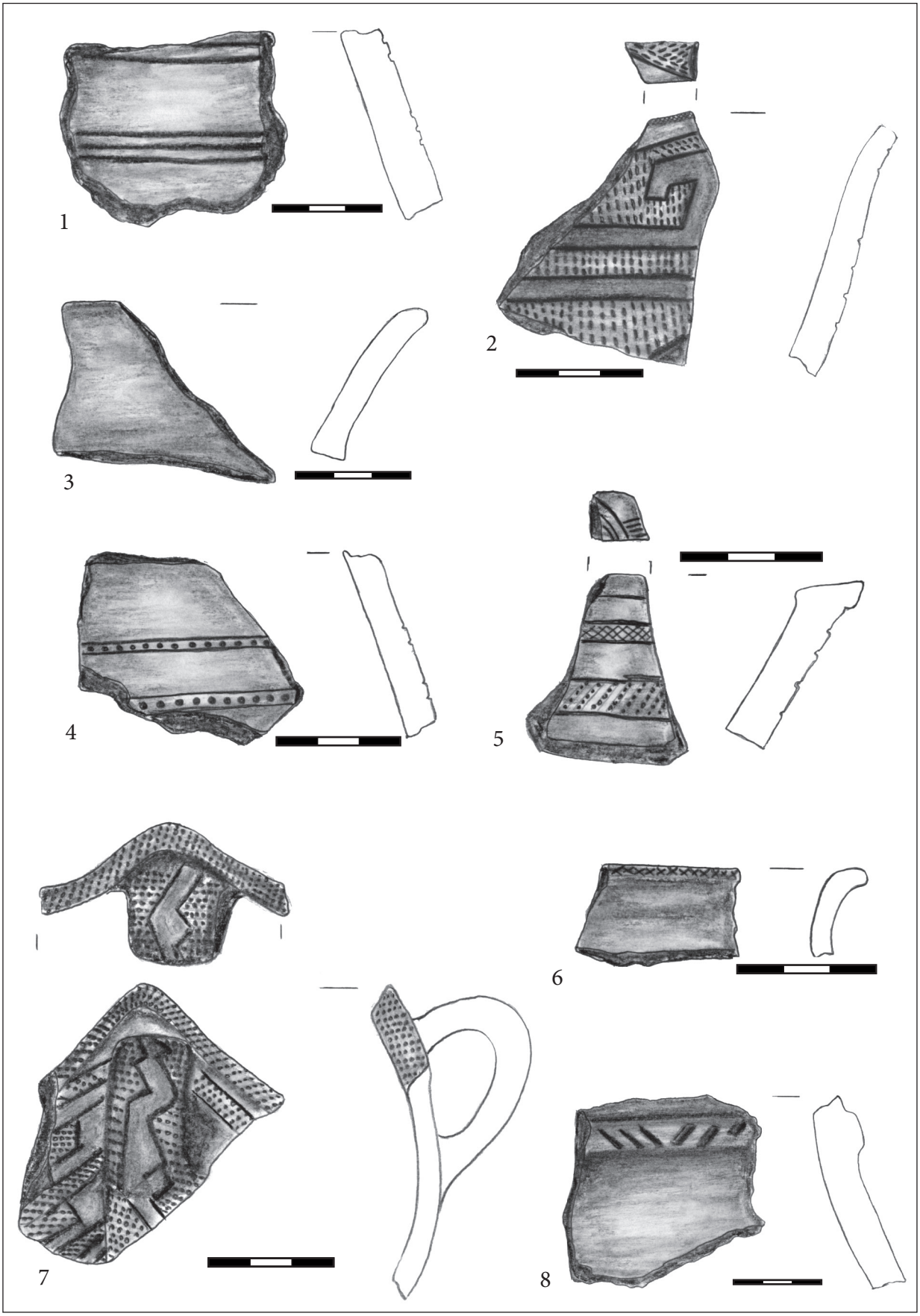

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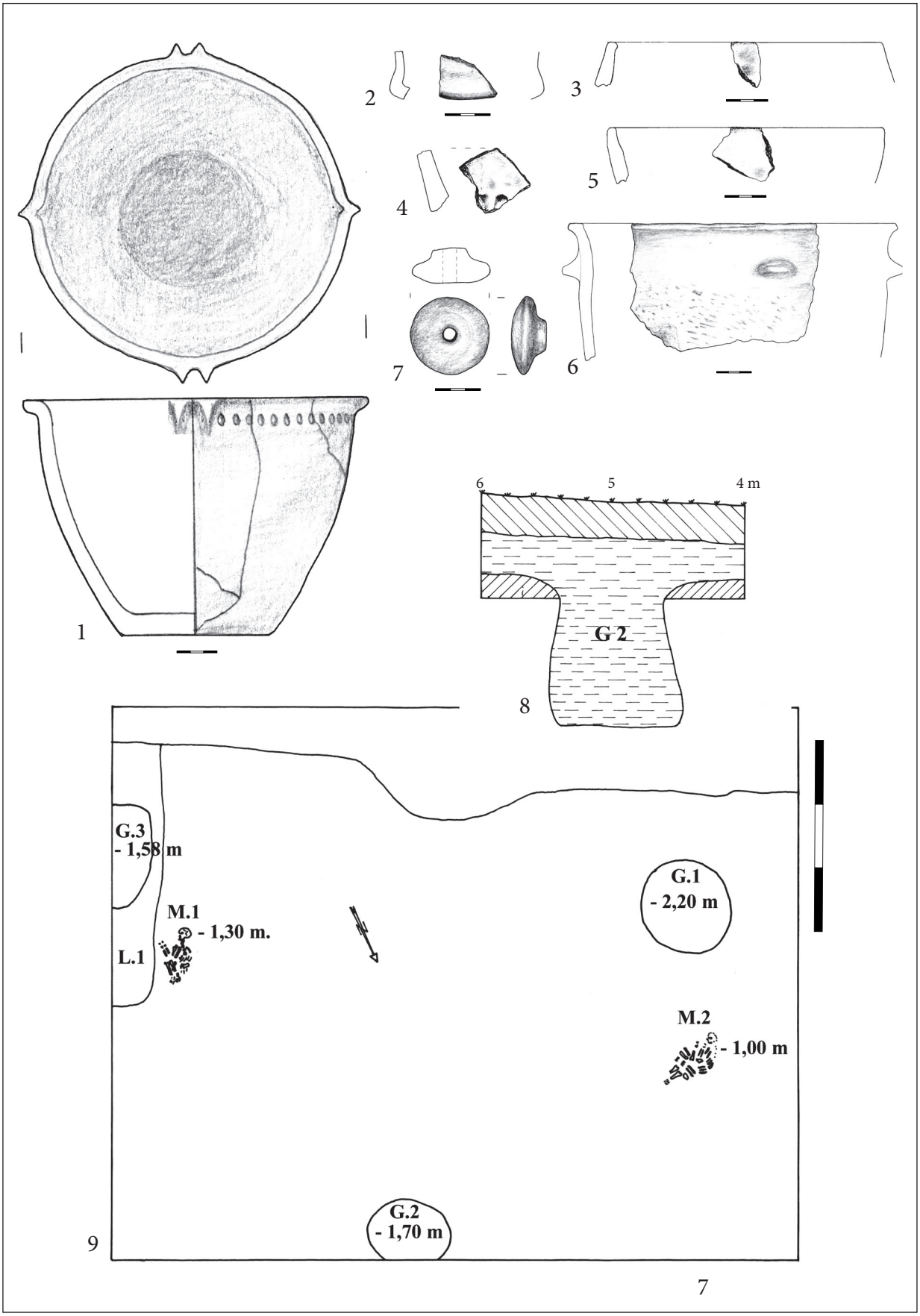

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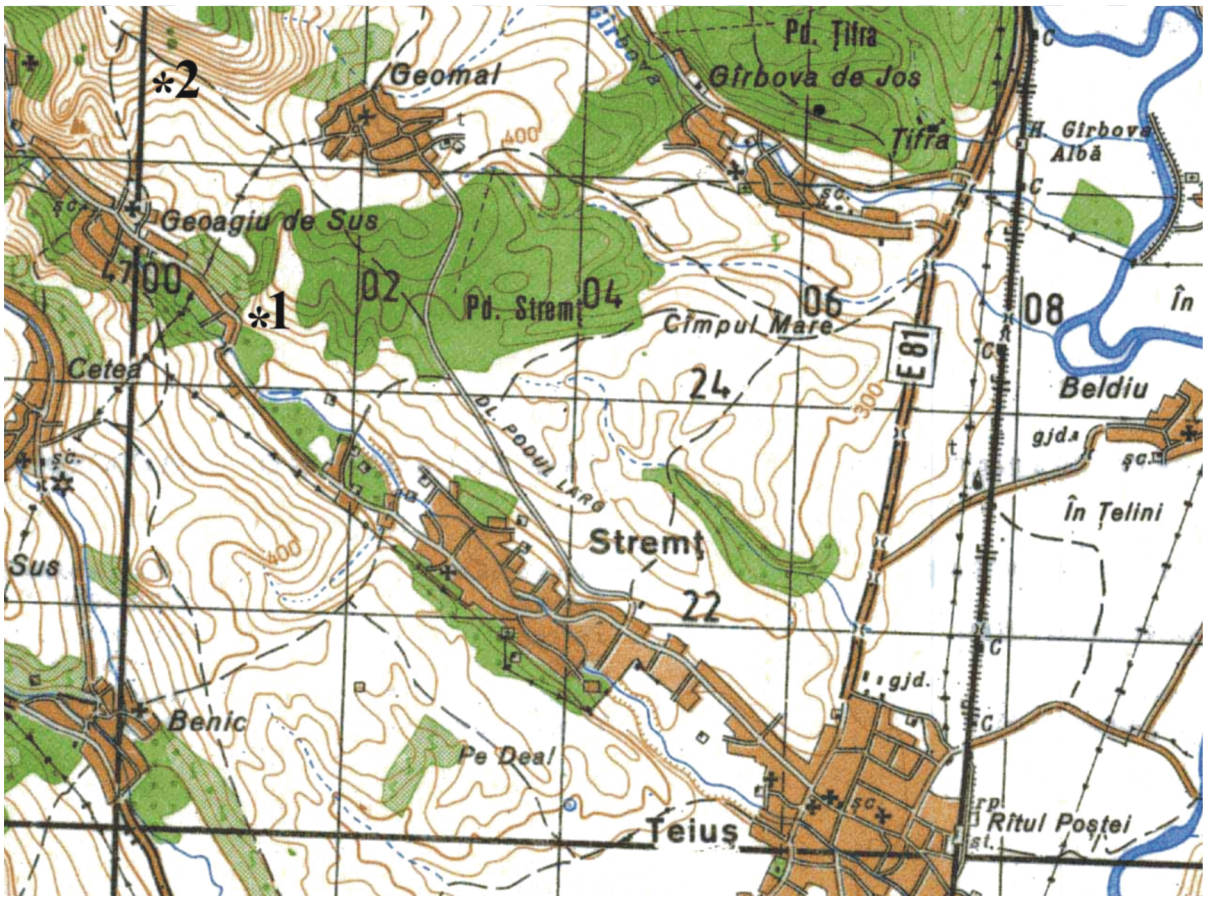

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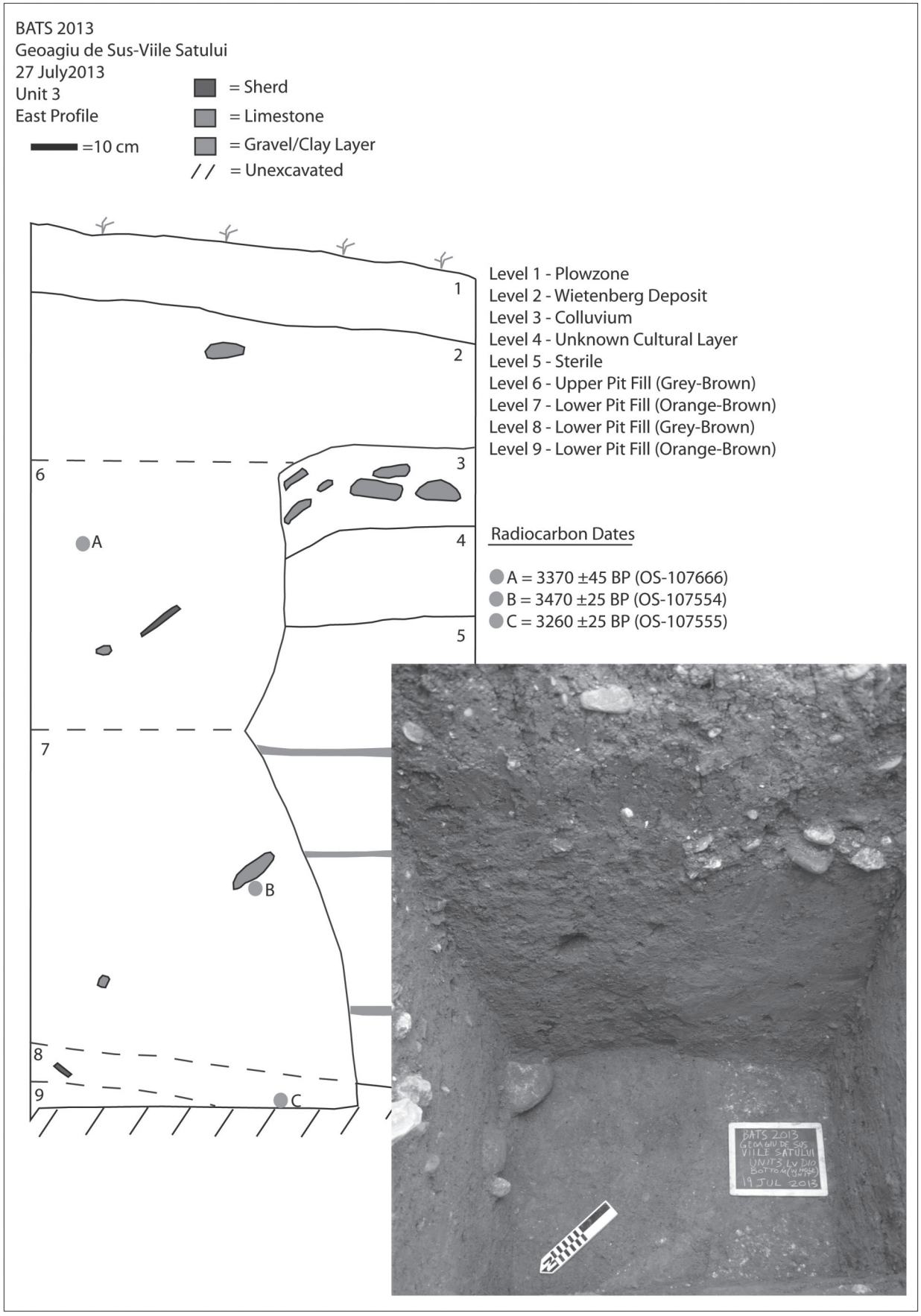

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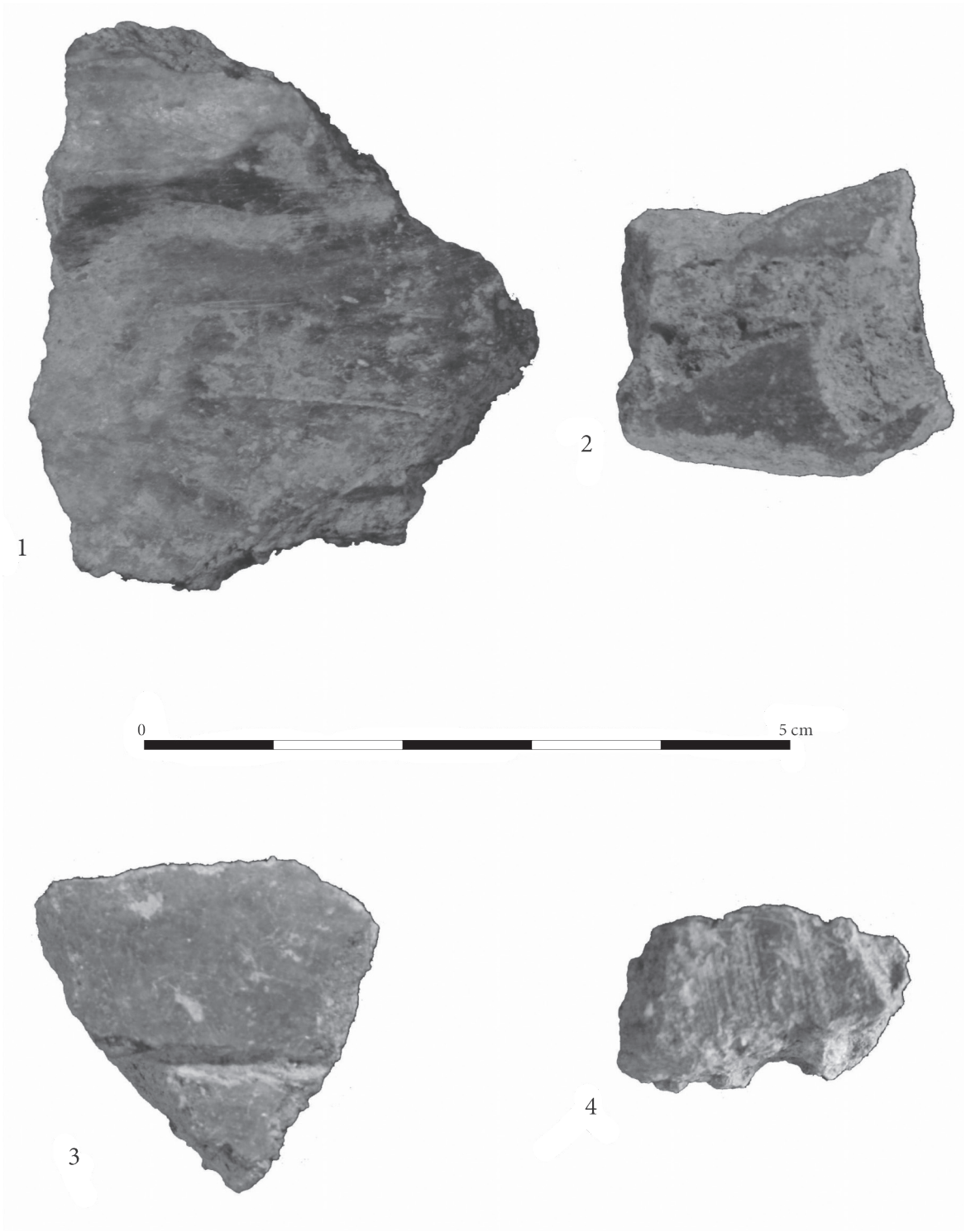

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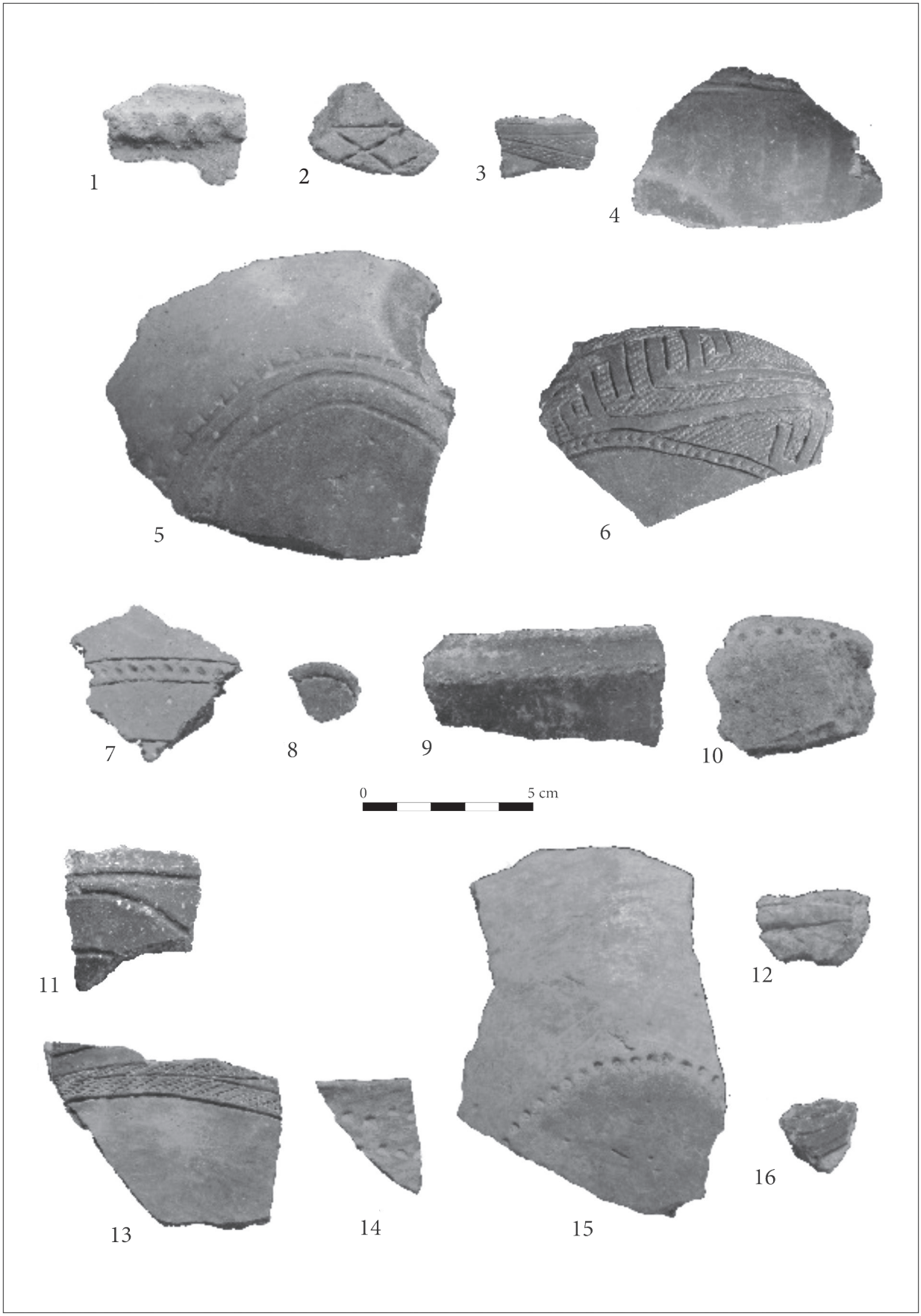

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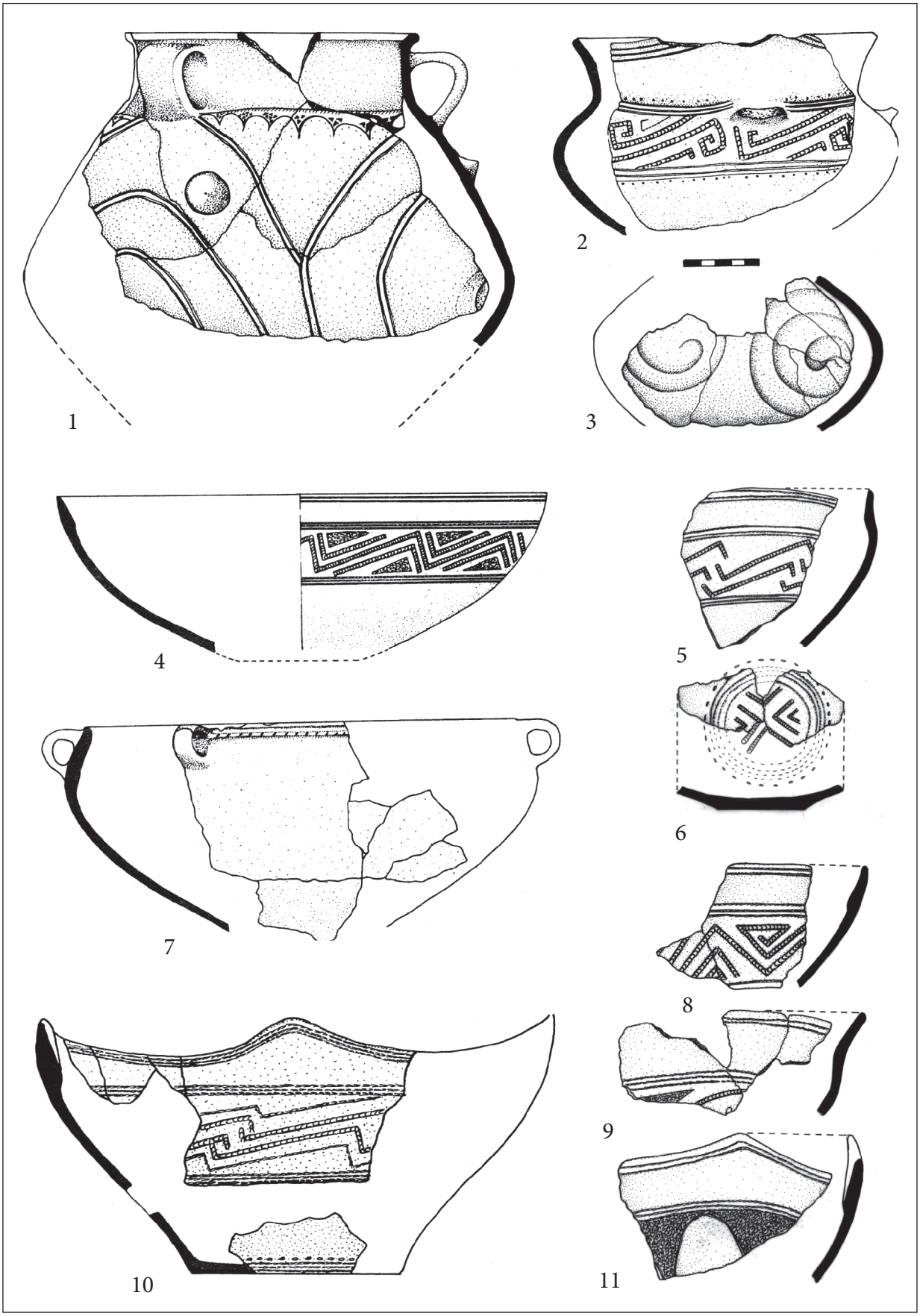

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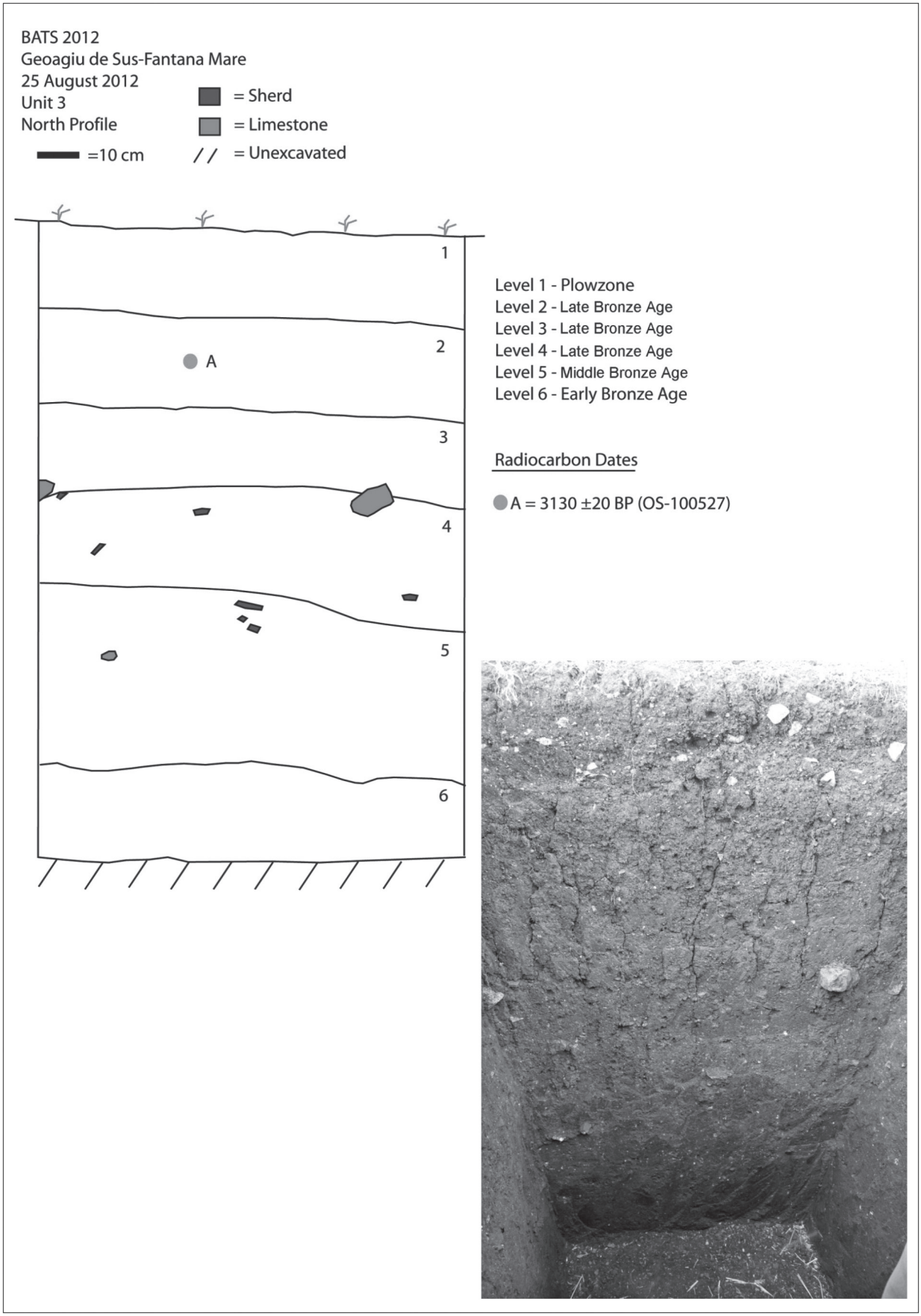

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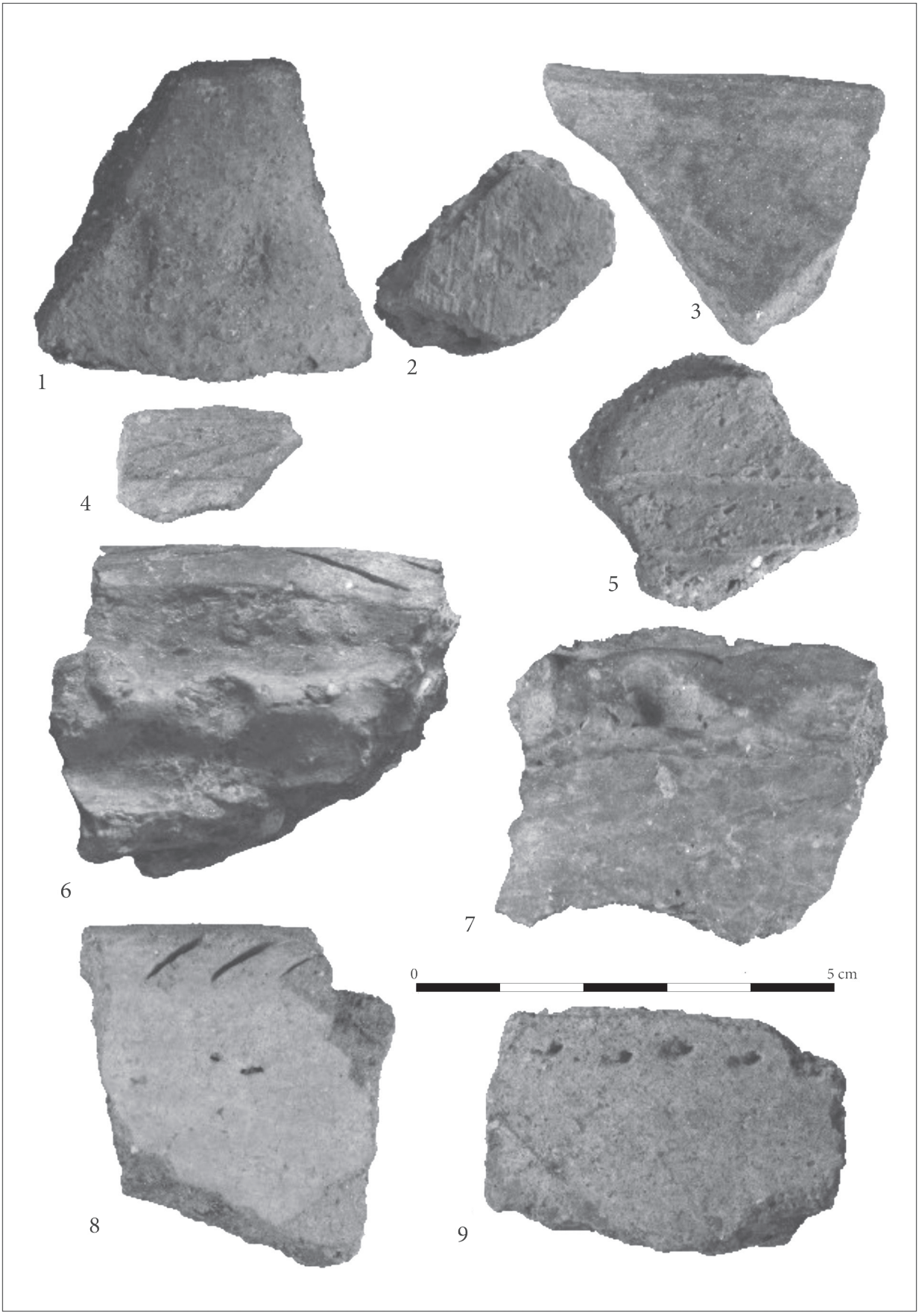

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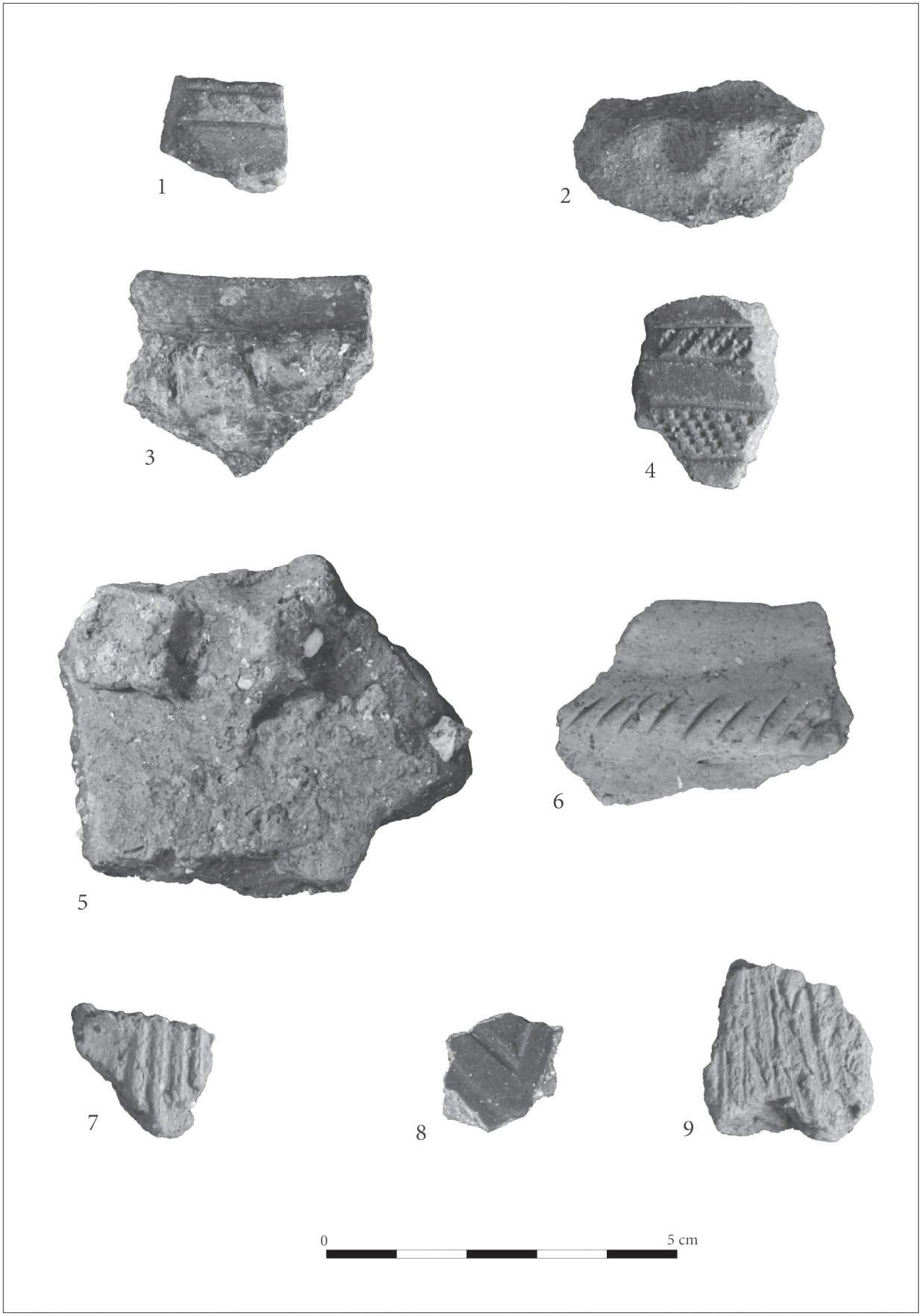

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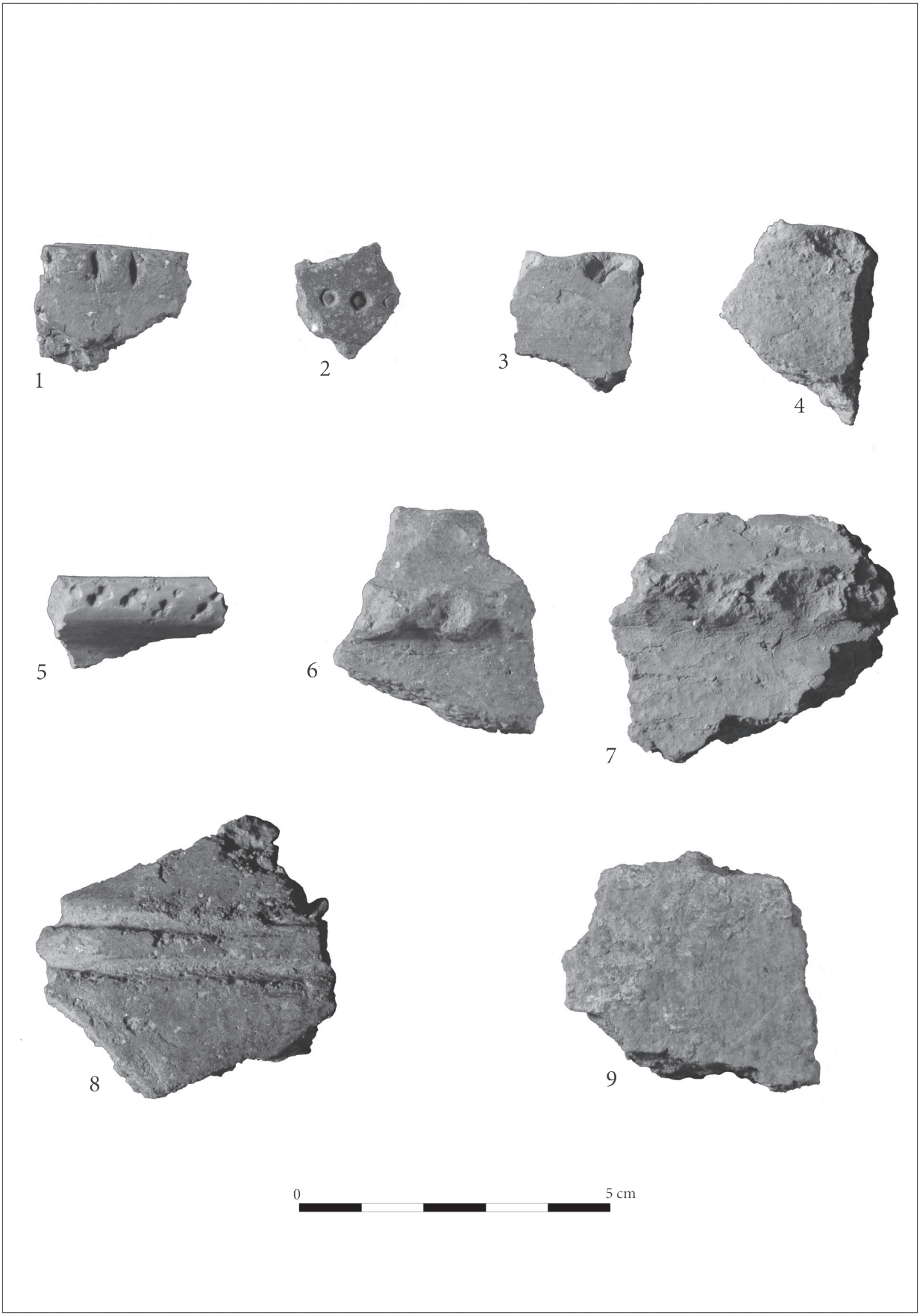

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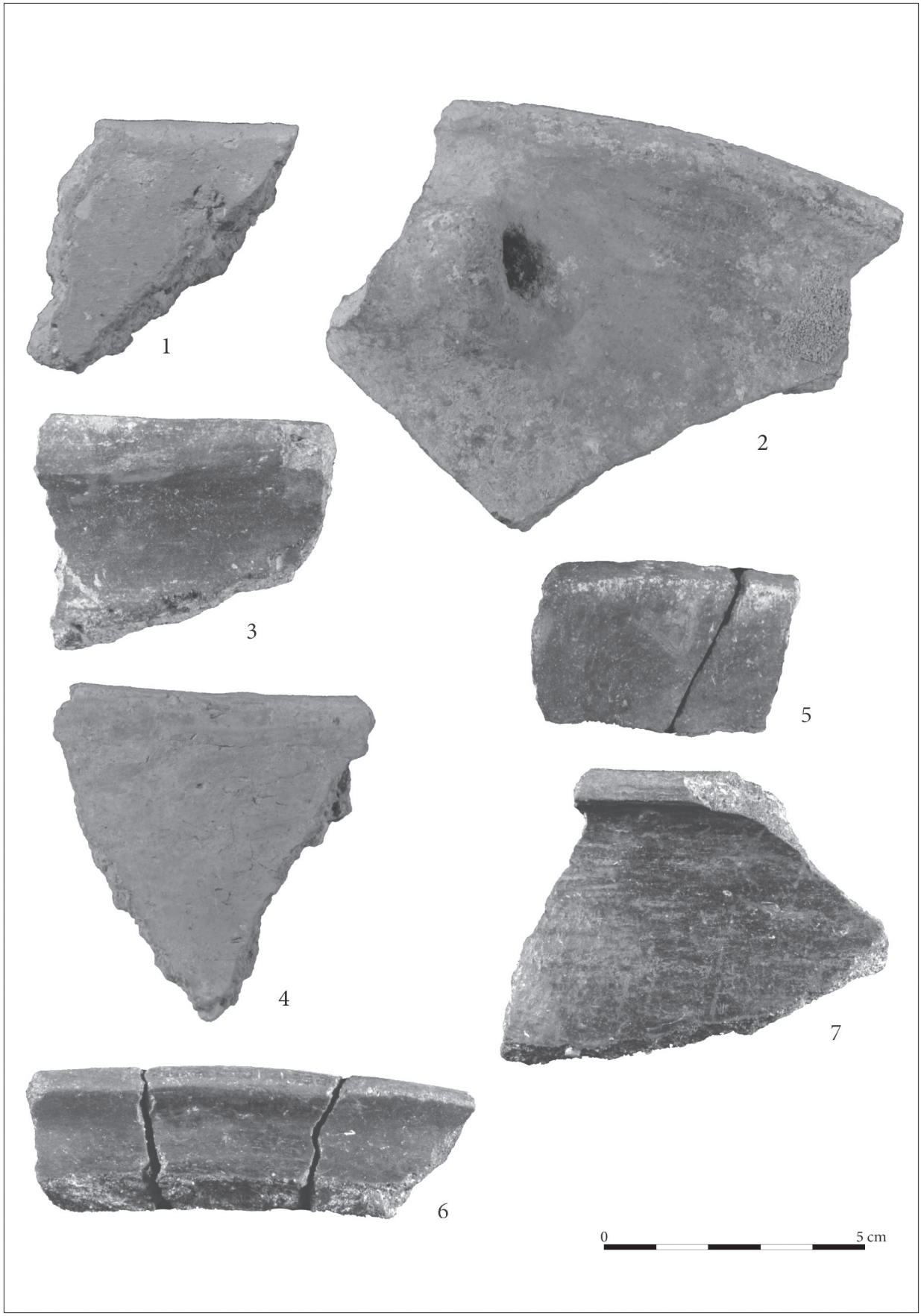

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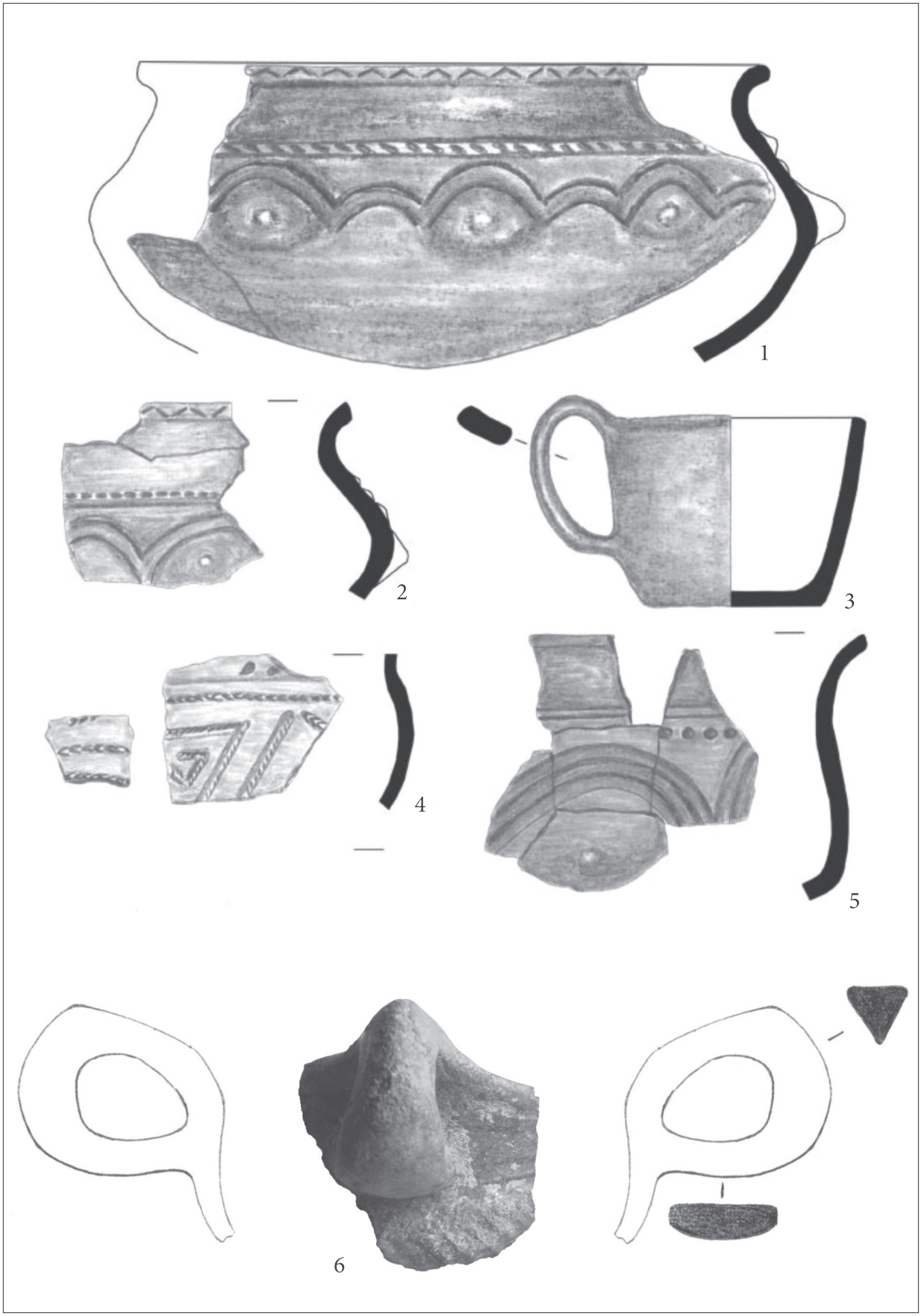

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Abbreviations

ABSA	The Annual of the British School at Athens, Cambridge University press
Acta ULFA	Acta Universitatis Lodziensis. Folia Archaeologica, Łódź
ActaArch Carpathica	Acta Archaeologica Carpathica, Academia Scientiarum Polona Collegium Cracoviense, Kraków
ActaArchHung	Acta Archaeologica Academiae Scientiarum Hungaricae, Budapest
ActaMB	Acta Musei Brukenthal, Sibiu
ActaMN	Acta Musei Napocensis, Cluj-Napoca
ActaMP	Acta Musei Porolissensis, Zalău
ActaMPa	Acta Musei Papensis, Pápa
ActaPraehistArch	Acta Praehistorica et Archaeologica, Berlin
ActaTS	Acta Terrae Septemcastrensis, Sibiu
AEA Eurasia	Archaeology, Ethnology & Anthropology of Eurasia, Siberian Branch of the Russian Academy of Sciences, Novosibirsk
AEAM	Το Αρχαιολογικό έργο στην Άνω Μακεδονία, The Archaeological Work in Upper Macedonia, Archaeological Museum of Aiani
Aegaeum	Aegaeum, Le service d'histoire de l'art et d'archéologie de la Grèce antique, Université de Liège
AFN	Archäologische Forschungen in Niederösterreich, St.Pölten
AFSB	Arbeits- und Forschungsberichte zur Sächsischen Bodendenkmalpflege, Dresden
Agria	Agria, Annales Musei Agriensis. Az Egri Múzeum Évkönyve (1982), Eger
AIH	Régészeti Kutatások Magyarországon. Archaeological Investigation in Hungary, Budapest
AJPhA	American Journal of Physical Anthropology, Hoboken–Oxford
Alba Regia	Alba Regia, Annales Musei Stephani Regis, Székesfehérvár
Altertum	Das Altertum, Berlin
Aluta	Aluta, Revista Muzeului Naţional Secuiesc, Sfântu Gheorghe
AMND	Archäologische Mitteilungen aus Nordwestdeutschland
Analele Banatului	Analele Banatului (S.N.), Timişoara
Anali	Anali Zavoda z znanstveni nad JAZU u Osijeku
Angustia	Angustia, Sfântu Gheorghe
AnnalesUA	Annales Universitatis Apulensis, Series Historica, Alba Iulia
AnnalesUVT	Annales d'Université Valahia Targoviste Section d'Archéologie et d'Histoire, Târgovişte
ANODOS	Studies of the Ancient World, Trnavska univerzita
Antaeus	Antaeus, Budapest
AnthrAnz	Anthropologischer Anzeiger, Journal of Biological and Clinical Anthropology
AnthropKözl	Anthropológiai Közlemények, A Magyar Biológiai Társaság Embertani Szakosztályának folyóirata, Budapest
Antiquaries Journal	The Antiquaries Journal, Society of Antiquaries of London
Antiquitas	Antiquitas, Bonn
Antiquity	Antiquity, London
AÖS	Archäologie Österreichs Sonderausgabe, Wien
Apulum	Apulum, Acta Musei Apulensis, Alba Iulia
Archaeolingua SM	Archaeolingua Seria Minor, Budapest
ArchAustr	Archaeologia Austriaca, Wien
ArchBohemia	Archaeology in Bohemia
ArchBulg	Archaeologia Bulgarica, Sofia
ArchD	Archäologie in Deutschland, Darmstadt

ArchE	Archäologie in Eurasien, Mainz am Rhein
Archeologický Sborník	Archeologický Sborník, K šedesátým narozeninám Vratislava Janáka, Opava
Archeometriai Műhely	Archeometriai Műhely elektronikus folyóirat, Budapest
ArchÉrt	Archaeologiai Értesítő, Budapest
ArchHung	Archaeologia Hungarica, Budapest
ArchKorr	Archäologisches Korrespondenzblatt, Römisch-Germanischen Zentralmuseum in Mainz
ArchNeuchâteloise	Archéologie neuchâteloise, Neuchâtel
ArchPol	Archaeologia Polona, Warszawa
ArchRoz	Archeologické Rozhledy, Prague
ArchS	Archäologie in Salzburg
Arheo	Slovensko Archeološko Društvo
ArhMold	Arheologia Moldovei, Iaşi
ArhVest	Arheološki vestnik (Acta Archaeologica), Lubljana
ASGE	Arheologičeskij Sbornik Gosudarstvennogo Ermitaža, Leningrad
ASMCommunicationes	Archaeologica Slovaca Monographiae, Communicationes, Nitra
AUSBp	Annales Universitatis Scientiarum Budapestinensis de Rolando Eötvös Nominatae, Sectio Historica, Budapest
AVJC	Archeologické výzkumy v jižních Čechách, Historická budova Jihočeského muzea v Českých Budějovicích
BAR	British Archaeological Reports, International Series/British Series, Oxford
BayerVorgeschbl	Bayerische Vorgeschichtsblätter, München
BB	Bibliotheca Brukenthal, Sibiu
BBÁMÉ	Béri Balogh Ádám Múzeum Évkönyve, Szekszárd
Beiträge MK	Beiträge zu ur- und frühgeschichtlichen Archäologie des Mittelmeer-Kulturraumes, Bonn
Beiträge UFM	Beiträge zur Ur- und Frühgeschichte Mitteleuropas, Weissbach
Berliner Jahrbuch	Berliner Jahrbuch für Vor- und Frühgeschichte, Berlin
BerRGK	Bericht der Römisch-Germanischen Kommission, Frankfurt
BHAB	Bibliotheca Historica et Archaeologica Banatica, Timişoara
BIP	Biblioteca Istro-Pontica, Seria Arheologie, Tulcea
BLDAM	Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum, Wünsdorf
BM	Bibliotheca Marmatia, Baia Mare
BMA	Bibliotheca Mvsei Apvlensis, Alba Iulia
BMM	Bibliotheca Musei Marisiensis, Târgu Mureş
BMS	Bibliotheca Mvsei Sabesiensis, Sebeş
BT	Bibliotheca Thracologica, Bucureşti
BTMM	Budapest Történeti Múzeum, Műhely
BuletinMJT	Buletinul Muzeului Judeţean Teleorman. Seria Arheologie, Alexandria
Carpica	Carpica, Bacău
Castellum PP	Castellum Pannonicum Pelsonense, Budapest
Catalogi et Monographie	Catalogi et Monographie, Ljubljana
CCA	Cronica Cercetărilor Arheologice din România
CCDJ	Centrul Cultural Dunărea de Jos, Galaţi
Članci i Građa	Članci i Građa Tuzla, Muzej Istočne Bosne, Tuzla
CMM	Časopis Moravského Muzea. Vědy společenské, Brno
ComArchHung	Communicationes Archaeologicae Hungariae, Budapest
CSPS	Časopis Společnosti přátel starožitností, Prague
CsSzMÉ	Csíki Székely Múzeum Évkönyve, Miercurea Ciuc
Dacia (N.S.)	Dacia, Recherches et découvertes archéologiques en Roumanie, I–XII (1924–1948), Bucureşti; Nouvelle Série (N.S.), Dacia. Revue d'archéologie et d'histoire anciene, Bucureşti
Danubius	Revista Muzeului de Istorie Galaţi
Der Schlern	Der Schlern, Monatszeitschrift für Südtiroler Landeskunde, Konstanz

DissArch	Dissertationes Archaeologicae Brunenses/Pragensesque, Brno
DissArchBudapest	Dissertationes Archaeologicae ex Instituto Archaeologico Universitatis de Rolando Eötvös nominatae, Budapest
DissPann	Dissertationes Pannonicae, ex Instituto Numismatico et Archaeologico Universitatis de Petro Pázmány nominatae Budapestinensis provenientes, Budapest
Dobrudža	Istoričeski Muzej v Dobrič i v Silistra, Varna
Documents préhistoriques	Annales littéraires de l'Université de Besançon
Dunántúli Szemle	Dunántúli (Vasi) Szemle (1933–1944), Szombathely
EA	Eurasia Antiqua. Zeitschrift für Archäologie Eurasiens, Berlin
EAE	Experimentelle Archäeology in Europa, Uhldingen-Mühlhofen
EJA	European Journal of Archaeology
EphemNap	Ephemeris Napocensis, Cluj-Napoca
EPRO	Études préliminaires aux religions orientales dans l'Empire romain
ERAUL	Etudes et recherches archéologiques de l'Université de Liège
Erdélyi TudFüz	Erdélyi Tudományos Füzetek, Az Erdélyi Múzeum Egyesület kiadása, Kolozsvár
FAP	Fontes Archaeologici Pragenses, Prague
FB	Fundberichte aus Baden-Württemberg, Stuttgart
FBBW	Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg
FDS	Forschungen zur Denkmalpflege in Südtirol, Trento
FÖ	Fundberichte aus Österreich, Wien
FolArch	Folia Archeologica, Budapest
FolPraehPos	Folia Praehistorica Posnaniensia, Poznań
ForschStillfried	Forschungen in Stillfried, Veröffentlichungen der Österreichischen Gesellschaft für Ur- u. Frühgeschichte, Wien
GAS	Gothenburg Archaeological Studies, Göteborg
Germania	Germania, Frankfurt am Main
Gyulai Katalógusok	Gyulai Katalógusok, Gyula
Historica Carpatica	Historica Carpatica, Kosice
HOMÉ	A Herman Ottó Múzeum Évkönyve, Miskolc
HungArch	Hungarian Archaeology e-journal
IA	Internationale Archäologie, Buch am Erlbach, Espelkamp, Rahden/Westf.
IANSA	Interdisciplinaria Archaeologica. Natural Sciences in Archaeology. Archaeological Centre Olomouc
IHAD	Izdanja Hrvatskog arheološkog društva, Zagreb
IJRAT	International Journal of Research in Advent Technology, online journal
Instrumentum	Instrumentum, Bulletin du Groupe de travail européen sur l'artisanat et les productions manufacturées dans l'Antiquité
IntArchA-STK	Internationale Archäologie Arbeitsgemeinschaft, Symposium, Tagung, Kongress, Leidorf
ISPRS	International Society for Photogrammetry and Remote Sensing – International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences
Istros	Istros, Buletinul Muzeului Brăilei, Brăila
IUPUAS	Indiana University Publications Uralic and Altaic Series, Bloomington
Jahrbuch DAI	Jahrbuch des Deutschen Archäologischen Instituts, Berlin
Jahrbuch RGZM	Jahrbuch des Römisch-Germanischen Zentralmuseums, Mainz
JahrIVUF	Jahresbericht des Institut für Vorgeschichte des Universität Frankfurt a. M.
JAS	Journal of Archaeological Science, London
JEA	Journal of European Archaeology, Durham
JPMÉ	A Janus Pannonius Múzeum Évkönyve, Pécs
JWP	Journal of World Prehistory
Korrespondenzblatt AEU	Korrespondenzblatt der deutschen Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, München
LAF	Linzer Archäologische Forschungen, Linz
LDMK	A Laczkó Dezső Múzeum Közleménye, Veszprém
MAGW	Mitteilungen der Anthropologischen Gesellschaft Wien

Marisia	Marisia (V–), Studii şi Materiale, Târgu Mureş
Marmatia	Marmatia, Anuarul Muzeului Judeţean Maramureş, Baia Mare
MAS	Materialia Archaeologica Slovaca, Nitra
MBVF	Münchener Beiträge zur Vor- und Frühgeschichte, München
MCA (S. N.)	Materiale şi Cercetări Arheologice, Bucureşti
MemAnt	Memoria Antiquitatis, Acta Musei Petrodavensis, Bucureşti
Memorie	Memorie del Museo Civico di Storia Naturale di Verona, Sezione Scienze dell'Uomo, Verona
Memorii	Memoriile Academiei Române, Bucureşti
MFMÉ	A Móra Ferenc Múzeum Évkönyve, Szeged
Moravské Křižovatky	Moravské Křižovatky, Střední Podunají mezi pravěkem a historií, Moravské zemské muzeum, Brno
Mousaios	Mousaios, Buzău–Brăila
MPK	Mitteilungen der Prähistorischen Kommision der Österreichischen Akademie der Wissenschaften, Wien
MSVF	Marburger Studien zur Vor- und Frühgeschichte, Marburg
Musaica	Musaica, Bratislava
Muzejski vjesnik	Muzejski vjesnik, Varazdin
ΜΩΜΟΣ	ΜΩΜΟΣ, Őskoros Kutatók Összejövetelének konferenciakötete
МИА	МИА, Moscova
NotizieS	Notizie degli Scavi di Antichità, Roma
Obavijesti HAD	Obavijesti Hrvatsko arheološko društvo, Zagreb
Offa	Offa, Berichte und Mitteilungen zur Urgeschichte, Frühgeschichte und Mittelalterarchäologie, Neumünster
OpArch	Opuscula Archaeologica, Arheološki zavod, Filozofski fakultet u Zagreb
Opera IAS	Opera Instituti Archaeologici Sloveniae, Ljubljana
Ősrégészeti levelek	Ősrégészeti levelek. Prehistoric newsletter, Budapest
PamArch	Památky Archeologické, Praha
Pannonkör Füzetek	Pannon Kulturális Örökség Füzetek, Kőszeg
PAS	Prähistorische Archäologie in Südosteuropa, Berlin, Kiel, München
PAT	Patrimonium Archaeologicum Transylvanicum, Cluj-Napoca
PBF	Prähistorische Bronzefunde, München, Stuttgart
PJZ	Praistorija Jugoslavenskih Zemalja, Sarajevo
PLoS ONE	PLoS ONE. Open Access journal, San Francisco, Cambridge
Praehistorica	Praehistorica, Praha
Praehistorica Basel	Praehistorica, Basel
Pravěk NŘ	Pravěk Nová řada, Ústav archeologické památkové péče, Brno
Prilozi IAZ	Prilozi Instituta za arheologiju u Zagrebu, Zagreb
PrzArch	Przegląd Archeologiczny, Wrocław
PZ	Praehistorische Zeitschrift, Berlin
Ráckevei Múzeumi füzetek	Ráckevei Múzeumi füzetek, Ráckeve
Radiocarbon	Radiocarbon, International Journal of Cosmogenic Isotope Research, Tucson
RadMV	Rad Muzeja Vojvodine
RadVM	Rad Vojvođanskih muzeja, Novi Sad
RégFüz	Régészeti Füzetek, Budapest
RevArh	Revista Arhivelor (S.N.), Bucureşti
RevBis	Revista Bistriţei, Bistriţa
RevMuz	Revista Muzeelor, Bucureşti
RGF	Römisch-Germanische Forschungen, Mainz–Berlin
RGZM	Römisch-Germanisches Zentralmuseum, Monographien, Bonn–Mainz
RJA	Romanian Journal of Archaeology, online
RKM	Régészeti Kutatások Magyarországon, Budapest
RSP	Rivista di scienze preistoriche, Florence
SAA	Studia Antiqua et Archaeologica, Iaşi

Savaria	Savaria Pars Archaeologica, Szombathely
SAX	Százhalombatta Archaeological Expedition, Budapest
SBA	Saarbrücker Beiträge zur Altertumskunde, Bonn
SCIV(A)	Studii şi Cercetări de Istorie Veche (şi Arheologie 1974–), Bucureşti
Sibrium	Sibrium, Center of Prehistoric and Archaeological Studies of Varese
SlovArch	Slovenská Archeológia, Nitra
SMA	Studies in Mediterranean Archaeology, Göteborg
SMA	Seria Monografii Arheologice, Sfântu Gheorghe
SMK	Somogy Megyei Múzeumok, Kaposvár
SNMP	Sborník Národního muzea v Praze, řada A – Historie. Acta Musei Nationalis Pragae, Series A – Historia, Praha
SovArh	Sovjetska Arheologija
Specimina EA	Specimina Electronica Antiquitatis, Pécs
Specimina Nova	Specimina Nova Dissertationum ex Institutom Historico Universitatis Quinqueecclesiensis de Jano Pannonio nominatae, Pécs
SPM	Die Schweiz vom Paläolithikum zum frühen Mittelalter. La Suisse du Paléolithique à l'aube du Moyen-Âge Basel
SprArch	Sprawozdania Archeologiczne, Kraków
SSMA	Saarbrücker Studien und Materialien zur Altertumskunde, Saarbrücken
Starinar N. S.	Starinar, Arheološki institute, Beograd
StC Maramureşene	Studii şi Cercetări Maramureşene, Baia Mare
StCom Satu Mare	Studii şi Comunicări Satu Mare
StCom Sibiu	Studii şi Comunicări, Sibiu
StudArch Brunensia	Studia archaeologica Brunensia, Brno
StudArch Slovaca	Studia Archaeologica Slovaca Instituti Archaeologici Acadaemiae Scientiarum, Nitra
StudArchMed	Studia Archaeologica et Medievalia, Bratislava
Studia Troica	Studia Troica, Universität Tübingen
Studie AUCAB	Studie Archeologického Ústavu Československé Akademie věd v Brně, Praha
Studii de Preistorie	Asociaţia Română de Arheologie, Bucureşti
Studii Semitici	Studii Semitici, Roma
Študijné zvesti	Študijné zvesti, Archeologického Ústavu Slovenskej Akadémie Vied, Nitra
SympThrac	Symposia Thracologica, Bucureşti
Terra Sebus	Terra Sebus, Acta Musei Sabesiensis, Sebeş
Thraco-Dacica	Thraco-Dacica, Bucureşti
Tisicum	Tisicum, A Jász-Nagykun-Szolnok Megyei Múzeumok Évkönyve, Szolnok
TransRev	Transylvanian Review, Cluj-Napoca
TVMK	Tapolcai Városi Múzeum Közleményei, Tapolca
Tyragetia	Tyragetia (S.N.), Anuarul Muzeului Naţional de Istorie al Moldovei, Chişinău
UPA	Universitätsforschungen zur prähistorischen Archäologie, Bonn
VAH	Varia Archaeologica Hungarica, Budapest
VAMZ	Vjesnik Arheološkog muzeja u Zagrebu
VF	Vorgeschichtliche Forschungen, Berlin
VIA KÖK	VIA, Kulturális és Örökségvédelmi Kismonográfiák. Monographia Minor in Cultural Heritage, Budapest
VMK	Veröffentlichungen der Mykenischen Kommission, Wien
VMMK	A Veszprém Megyei Múzeumok Közleményei, Veszprém
VMUFP	Veröffentlichungen des Museums für Ur- und Frühgeschichte Potsdam
Vrancea	Vrancea Studii şi Comunicări, Vrancea
WMMÉ	Wosinsky Mór Múzeum Évkönyve, Szekszárd
Zalai Múzeum	Zalai Múzeum, Közlemények Zala megye múzeumaiból, Zalaegerszeg
Zbornik IA	Zbornik Instituta za Arheologiju, Zagreb
Zborník SNM	Zborník Slovenského Národného Múzea, Bratislava
Ziridava	Ziridava, Studia Archaeologica, Arad
Županjski Zbornik	Županjski Zbornik, Zavičajni muzeja Županja