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NEW ARCHAEOLOGICAL INVESTIGATIONS AT PECICA *ŞANŢUL MARE*

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Introduction

The great settlement of Pecica *Şanţul Mare* is among the most important archaeological sites of the European Bronze Age. The site occupies a strategic location astride the river Mureş between the ore producing region of the Western Carpathian Mountains and the metal using societies of the Carpathian Basin and beyond. Similarly, its deeply layered deposits have served as a chronological standard for the entire Bronze Age in Eastern Europe.

In November of 2003, the Muzeul Banatului Timişoara, the Muzeul Judeţean Arad, and the Museum of Anthropology of the University of Michigan (USA) entered into a contract of collaboration to facilitate new archaeological research at the site. Following a brief planning visit in 2004, major field investigations were begun in 2005 with funding from the National Science Foundation (USA). The principle investigators for the research are Dr. John O'Shea (University of Michigan), Dr. Florin Draşovean (Timişoara) and Dr. Peter Huegel (Arad). Additionally, Mr. Pascu Hurezan (Arad), Mr. Alexandru Szentmiklosi (Timişoara), and Dr. Alex Barker (Milwaukee Public Museum) were involved in the day to day management of the excavations.

The research campaign in 2005 was designed as a pilot season, and served both to establish the character of the Bronze Age archaeological deposits and to provide the necessary preparation for larger area excavations, which are planned to begin in 2006. The specific goals of the 2005 season were 1) to establish the character of intact Bronze Age deposits at Pecica, with a particular emphasis on variation that may be present across the site; and 2)

to initiate the creation of a radiocarbon based chronology for the regional Bronze Age. In addition, work in 2005 also included a program of off site coring, topographic mapping, and initial development of a regional GIS site database.

Over the course of the five-week pilot season two 12-15m long stratigraphic trenches were excavated to reveal more than three meters of deeply stratified Bronze Age deposits and documented at least two more meters of stratified bronze age deposits below the base of these trenches using auger cores. In addition, a series of ten cores were collected from across the tell and the surrounding site environs, detailed topographic maps of the tell, fortifications, surrounding features and looter's pits were compiled, and more than fifty radiometric samples, two archaeomagnetic series, two dozen micromorphological samples and a half-dozen sediment series from deep cores were collected from intact cultural deposits.

Background to Investigations at Pecica *Şanţul Mare*

The site is located roughly 7 km west of the modern town of Pecica in western Romania. It is situated on a high bank at the edge of the marshy floodplain, overlooking the river Mureş (Figure 1). The tell is ovate in shape, and measures roughly 117 x 70 m. at its uppermost level.

The Pecica tell has been the focus of archaeological interested since at least the nineteenth century. L. Dömötör conducted the earliest documented excavation at the site in 1898 and 1900 (Dömötör L., 1902). M. Roska conducted major excavations in 1910-11 and 1923-24 (Roska M., 1912; 1942). Roska's excavations revealed a four meter sequence of Bronze Age deposits, which he divided into a series of 16 levels. As the sequence spanned virtually the entire period of the Carpathian Basin Bronze Age, these 16 levels provided one of the first chronological guides for archaeology in the region. Indeed, the metal and ceramic types associated with these levels continue to provide the primary means for relative dating in Carpathian Basin Bronze Age sites (cf. Childe V. G., 1929; Bóna I., 1975; Soroceanu T., 1991).

With some limited additional excavation in the interim (Popescu 1944), the next major period of site excavation occurred during the 1960's. I. H. Crişan opened a series of large excavation units across the site during the years 1960 through 1964 (Crişan I-H., 1978). While excavating on a large scale, the main focus of Crişan's research and subsequent publication is the Dacian period occupation of the tell. Aside from limited stratigraphic soundings, these excavations only extended to the base of the Dacian

occupation layers. This is a fact that was confirmed and put to use in the Bronze Age focused research of 2005.

The planning of new excavations at Pecica required that attention be paid both to the extensive prior (and often undocumented) excavation of the site and to the important intact Dacian and Medieval layers that survive on the site and overlie the Bronze Age deposits that are of interest to the present research. As such, a strategy which permitted the most direct access to intact Bronze Age deposits while minimizing the disturbance of later occupation material was needed. Fortunately, the most extensive and best documented excavations at the site, those of Crişan in the 1960's, were directed primarily at the Dacian levels of the site. It was reasoned that by relocating Crişan's former excavation units, we would be able to reach Bronze Age deposits beneath the backfill of these earlier units, minimizing impact on intact cultural layers. As such, a significant portion of the 2005 fieldwork was directed at identifying and confirming the location of two of Crişan's major excavation areas. The location of the 2005 excavation trenches and their relationship to Crişan's major excavation areas are illustrated in Figure 2.

Trench 1 was located over the area of Crişan's Trench S-III, and extended into his major excavation blocks B and A. Within the area of Trench 1 a series of four contiguous 2m squares were excavated following natural levels. These layer excavations began immediately below the level of Crişan's excavation block and exposed the contact between the base of the Dacian age deposits (Crişan's Dacian II layer) and the top of the Bronze Age layers. These tests provided important insight into the character of the deposits at this critical archaeological junction and provided an opportunity to test the feasibility of differing sampling programs that are to be used in future years. These units were excavated to a depth of 2-2.5m below modern ground surface, and were subsequently covered and backfilled to protect the underlying deposits.

The main area of Trench 1 was excavated to a depth of 3-3.5m below the modern ground surface. Within the area of stratigraphic excavation, major layer changes were recorded and mapped, and features were documented. Samples for radiocarbon and archaeomagnetic dating, and micro-morphology samples were collected, as were representative samples of cultural material and animal bone. The profile resulting from the stratigraphic excavations in Trench 1 are presented in figure 3a.

Trench 2 (figure 3b) was excavated in a fashion similar to the stratigraphic portion of Trench 1. There was the added complication, however, of Crişan's deep soundings that were excavated deeply into the Bronze Age levels of the

site. Once the location of Crişan's Trench S-II was identified, it was cleared of backfill and extended to its full length towards the south end of the site. The stepped portions of the trench were then identified, with the initial deeper segment being cleared of backfill, and with the area of the final deep sounding being identified. Backfill was removed from the upper portion of this deep sounding, but was not taken to its full depth due to concern over safety and possible wall collapse. Radiocarbon and archaeomagnetic samples were collected from Trench 2, as were a second sequence of micromorphology samples and a sequence of flotation samples. Representative samples of cultural material and animal bone were also collected.

With the completion of the 2005 excavation season, both trenches were closed to protect the standing and underlying deposits. The primary stratigraphic profile and base of each trench was covered with heavy gauge plastic and the trench was then backfilled with loose soil.

In addition to excavation, the 2005 season also included a pilot program of soil coring and topographic mapping. Topographic mapping of the site and its surroundings was undertaken using a Sokkia SET600 total station, with the resulting maps being produced using the programs Surfer (Golden Software) and Arcview (ESRI). The detailed mapping of the tell surface clearly documents the extent to which modern looting is destroying the site (Figure 4); confirming the extensive occurrence of looting pits noted during the 2004 site visit. The density of modern looters' pits is disturbing, and illustrates the ongoing vulnerability of the site and its need for protection.

A total of ten deep cores were collected, sampling areas on the tell and areas in the immediate environs offsite (Figure 5). Cores were collected using an AMS standard soil auger with a closed 8.2 cm bucket. As configured, the corer permitted sampling to a maximum depth of six meters. Samples from each observed soil stratigraphic unit were collected and processed to determine both sediment characteristics and the nature of cultural materials present within the layers.

Preliminary Results

The program of auger coring provided a striking view of the tell, the ditch, and the extent of Bronze Age settlement in the vicinity of the tell. These cores indicate that the fortification ditch contains cultural materials to a depth greater than five meters below the modern ground surface, and that the surrounding fields beyond the site ditch contain Bronze Age cultural deposits to depths of two to three meters.

The cross sectional profile of the tell revealed by the cores is particularly

striking (Figure 6) and highlights the appropriateness of the name *Şanţul Mare*. This figure suggests that the original ditch may have been excavated to a depth of 8 meters or more, and may also suggest multiple episodes of ditch construction. The extent of intact Bronze Age deposits is also highlighted in this cross-section. Although more data are needed to make a definitive determination, the cross section may also support the argument that the construction of the great ditch post-dated some or all of the Bronze Age occupation of the site. It is certainly clear from the coring evidence that the Bronze Age occupation of the site covered a much greater area than is represented by the tell summit.

The 2005 stratigraphic excavations provided a useful first glimpse of the later Bronze Age occupation of the site. The stratigraphic profiles, drawn for both trenches (Figure 3) reveal tight sequences of layered Bronze Age construction and burning similar to those described by Roska and Crişan. Preliminary analysis suggests that the observed patterns of change are similar in both trenches. Physical descriptions of the strata have been completed (Table 1 and 2) and analysis of micromorphological sections is currently underway.

Several points are worth noting regarding the upper portions of the site. In Trench 1, traces of Crişan's Dacian I and II layers were observed and occurred immediately above densely layered Bronze Age deposits. While most of the upper Dacian layer had been removed in the 1960's, traces of the Dacian II deposits were encountered in places where the exploratory trench moved beyond the limits of Crişan's excavations. This lower Dacian layer was remarkable for its homogeneity and for its relative lack of cultural debris. This may suggest that the layer (labeled level B on the Trench 1 profile) represents a preconstruction fill and leveling of the site surface prior to the major construction of the Dacian age settlement. The absence of very late Bronze Age dates (see below) may similarly reflect significant surface modification of the site at the beginning of the Dacian occupation.

Excavations also provided some potential contrasts to contemporary Bronze Age settlements further west along the Mureş, such as the settlements at Klárafalva and Kiszombor in southeast Hungary (O'Shea J., 1996). Among these was the observation of dense concentrations of ovens and kilns at Pecica (Figure 7), suggestive of a much more intensive focus on metallurgical production. This emphasis on metallurgy was further supported by the pervasive occurrence of metallurgical slag throughout the site deposits, and by the discovery of a number of intact bronze artifacts, including a spearhead, a bow pendant and a bridle piece, despite the very limited nature of the excavations. In terms of other site

architecture, excavations suggest that the houses at Pecica were larger than the houses associated with the Maros Culture in Hungary and may have been multistoried.

Similarly, a preliminary analysis of recovered fauna suggests a striking difference in the role of wild foods, both hunted and fished, with these resources playing a much less important role at the core Pecica settlement than at the lower Mureş settlements. The pilot results from 2005 also hint at potential economic differentiation within the Pecica settlement, with a much higher concentration of sheep/goat remains in the area of Trench 1, and a more generalized representation of cattle and wild animal remains near Trench 2, along with a substantially greater representation of horse remains. While these results must all be viewed as exceedingly preliminary, the presence of such economic specialization at the site fits well with the expectation of increased social complexity in the later Bronze Age occupation of the site.

One series of stratigraphic anomalies were noted in association with what have been tentatively identified as house floors in both trenches (Figure 8). These floors, for the most part, assume the form of shallow basins to horizontal surfaces in cross-section. In a few contexts there are distinct lenses of folded sediments, discrete structural shifts from the surrounding layers. These are particularly striking in areas of densely-layered strata, where they have the visual appearance of waves or wave-like irregularities in the stratigraphic sequence. Their consistency suggests they have specific functions and are not due to post depositional processes. Areal excavations in future seasons will allow us to more fully document their character and function.

In addition to the documenting the stratigraphy for the later Bronze Age portion of the site, the 2005 campaign produced an initial series of 14C dates that span the later Bronze Age layers in the two stratigraphic trenches. Unlike the previously excavated Bronze Age settlements of the lower Mureş, wood charcoal for dating was abundant at Pecica. This seems to be a result of both greater availability of wood for utilization during the Bronze Age and better preservation conditions on the site. Large quantities of charred grain were also recovered from the site. Grain is a particularly useful material for dating since it typically will reflect only a single year's deposit. As a result of the excellent preservation of carbonized materials and their consistent association with major burn events on the site, the likelihood of contamination of the dates via movement within the deposit by rodents or later cultural activity is low.

Fourteen radiocarbon samples have been analyzed to date, providing a

chronometric framework for the later Bronze Age occupation of the site. The full set of calibrated dates, with their two-sigma range, are presented graphically in Figure 9. The calibrated dates confirm that the upper two to three meters of deposits, beneath the Dacian layers, are attributable to the Middle and Late Bronze Age. The calibrated dates (2-sigma) range from 2190BC-1530BC, with no outliers. When the dates recovered from the two trenches are compared, it is seen that there is a complete overlap of the period represented. Deposits spanning the remainder of the Early and Middle Bronze Age will be sampled as excavations progress in future years, and will result in excellent chronometric control over the Bronze Age occupations at Pecica *Șanțul Mare*.

Several observations can be made from this initial sequence of dates. The first, as mentioned previously, is that the Bronze Age dates terminate relatively abruptly around 1500 BC. Given the character of some of the metal work previously recovered from the site, and the somewhat younger Late Bronze Age dates recovered down river at Klárafalva-Hajdova (O'Shea J., 1991; Gogâltan F., 1999), it is surprising that later dates were not recovered from either of the two trenches at Pecica. While it is possible that these dates provide a true indication of the end of the Bronze Age occupation, it seems equally possible that the uppermost portion of the Bronze Age deposits have been truncated by later site construction. If this is the case, datable traces of the latest layers should be encountered at the edges of the tell or in areas of Bronze Age occupation that occur outside the main tell area.

A second point of note is that the dense and deep site deposits exposed so far were created over a relatively short period of time. This offers the potential not only for creating a highly detailed sequence of dates, but also suggests that future layer by layer excavations should be able to isolate very narrow slices of time and permit a fine grained assessment of social and economic change across the site.

Conclusions

Research conducted during the summer of 2005 at Pecica *Șanțul Mare* represents an important first step toward understanding the complex archaeological and social patterns present at this important Bronze Age settlement. Several preliminary conclusions can be drawn from the results of the preliminary season. First, the coring program indicates that the Bronze Age occupation extend far beyond the margins of the tell itself, and that the eponymous ditch at *Șanțul Mare* may, at least in part, postdate the

Bronze Age occupation of the site. Second, the Bronze Age occupations at Pecica differ from those of the Lower Mureş in several respects, including a greater density of ovens and kilns at Pecica *Şanţul Mare,* as well as a greater reliance on managed rather than collected resources. Third, the apparent truncation of terminal Bronze Age layers by Dacian episodes of surface modification has implications for both the interpretation of very late Bronze Age occupations at the site, and for potential radiometric dating of Dacian layers that may have incorporated reworked Bronze Age carbon. Fourth, radiometric evidence suggests that the late Bronze Age deposits were created over a relatively short period of time. Coupled with the densely layered stratigraphic units from this period, it appears that the Bronze Age witnessed relatively rapid rebuilding and remodeling episodes over a broad area of the tell. Future seasons of excavation will allow us to test both the validity of these preliminary conclusions, and to assess social variables we hope to monitor in order to better understand the emergence of social complexity in Bronze Age contexts along the Mureş

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Table 1

Trench 1 Stratigraphic Descriptions, 2005 Season

Zone
Description
Field Interpretation

Zone	Description	Field Interpretation
A1	10YR3/1, silt loam, granular structure, very friable consistency, abundant roots, mixed artifacts, clear wavy boundary	current A horizon, mixed material from past excavation activity
A2	10YR 2/1, silt loam, granular structure, very friable, mixed artifacts, abundant roots, clear smooth boundary (abrupt in some locations)	plow zone
A3	10YR 2/2, silt loam, weak subangular blocky and granular structure, friable, clear boundary	possibly a buried A horizon
A4	mixed soil material and clasts of variably sized daub fragments	either late occupation pit fill or early excavation backfilled, 2 intersecting pits
B1	10YR 6/1, silt to silt loam, friable, weak granular to massive structure, few artifacts, common roots, clear boundary	Dacian Period?, homogeneous gray deposit that appears across the site
B2	10YR 4/2, silt loam to silt, abundant ash and charcoal clasts, granular to cloddy structure, very friable consistency, few unsorted artifacts, clear boundary	pit fill
C1	5YR 5/8, silt, massive structure, soft consistence, abrupt boundary	floor with possible intrusive posts, in the southern extent of C1 in profile variable floors are clearly represented slopping slightly downward
C2	10YR 4/1, silt to silt loam, coarse gravel-size clasts of yellow silt, weak subangular blocky to granular structure, very friable consistency, abrupt boundary	?
C3	10YR 5/3, silt loam, weak subangular blocky structure, friable consistency, clear boundary	fill zone (?)
C4	10YR 5/3, silt loam, many fine to medium gravel-size burned and unburned daub, weak subangular blocky structure, friable consistency, clear boundary	mixed zone with destruction (daub fragments)
C5	10YR 3/2, silt loam, weak subangular blocky to granular, friable, boundary with B1 above contains concentrated daub clasts (yellow and reduced black), clear boundary	fill zone (?) with disturbed floor or structure fragments on top

C6	10YR 2/1, silt loam, massive to cloddy structure, very friable consistency, abrupt boundary	burned zone below prepared floor
C6a	10YR 7/2, silt, massive structure, loose to friable consistency, few fine gravel-size red daub clasts, abrupt boundary	ash deposit
C7	10YR 5/2 and 5/6, silt to silt loam, laminated consistent zones, massive structure, friable consistency, abrupt boundary	stacked prepared floors
C8	10YR 5/2, silt, loose consistency, mixed clast sizes of various materials, abrupt boundary	mixed zone
C9	10YR 6/4, silt, rigid consistency, abrupt boundary	2 cm thick floor remnant, truncated by B2
C10	10YR 5/4, silt, rigid consistency, abundant coarse charcoal immediately above and below, abrupt boundary	0.5 cm thick floor remnant, continues into N profile
C11	10YR 4/2, silt loam, cloddy to weak subangular blocky structure, friable consistency, abrupt boundary	small pit, possible posthole
C12	10YR 4/3, silt loam, cloddy to weak subangular blocky structure, friable consistency, charcoal lens across upper 20 cm, abrupt boundary	large pit, intruded by C11
D1	laminated 10YR 2/1 silt (~2 cm) and 10YR 7/3 (<1cm) silt, massive structure, dense but soft consistency, abrupt boundaries	floors
D2	laminated 10YR 7/3, 5/3, silt to silt loam, >10 lenses, massive structure, dense but soft consistence, abrupt boundaries	truncated, intact prepared surfaces, flat bottomed Bronze Age vessel exposed in the northern portion of the profile
D3	10YR 7/8, silt loam, rigid consistency, abrupt boundaries	remnant of burned, prepared floor
D4	laminated 10YR 2/1 silt (~2 cm) and 10YR 7/3 (<1cm) silt, massive structure, dense but soft consistency, abrupt boundaries	extension of laminated floor zones in zone D1, less well expressed
D5	laminated 10YR 5/1 silt (~1 cm) and 10YR 6/6 (<1cm) silt, massive structure, friable consistency, localized dense charcoal lenses, abrupt boundaries	floors
D6	variable construction material (daub) with charcoal, abrupt boundary	fragmented floor or wall material
D7	10YR 5/2, silt loam, massive structure, dense but soft consistency, abrupt boundary	
D8	2.5 Y 5/3, silt loam, abundant olive (5Y 4/4) mottles, massive structure, dense but soft consistency, abrupt boundary	

D9	2.5Y 4/2, silt, massive structure, soft consistency, mottled with few variably sized clasts of soft consistency silt at the top of the zone (mottling not present at the base), abrupt boundary	sequence of complex surfaces. Contiguous south profile indicates these zones are sloping slightly to the east (away from the tell edge). Green mottling suggests stabling, however, consistency of the lenses suggests prepared floors. No burning evident.
D10	2.5Y 4/3, silt, massive structure, dense but soft consistency, medium gray mm thick lens at base, abrupt boundary	
D11	10YR 4/4, silt loam, common mixed clasts of medium to coarse silt clasts, massive structure, friable consistency, abrupt boundary	
D12	10YR 4/3 silt to silty clay, mottled, massive structure, dense but soft consistency, abrupt boundary	
D12a	complex "folded" structure, 2.5Y 4/4, silt, massive structure, dense but soft consistency, overlain by a lens of 2.5Y 4/3, abrupt boundary	
D13	10YR 3/2.5, silt to silty clay, localized and inconsistent lenses of 2.5Y 4/3 silt, massive structure, dense but soft consistency, abrupt boundary	
E1	10YR 6/6, silt, massive structure, rigid consistency, abrupt boundary	broken section of floor or wall
E2	10YR 4/1, silt, common fine to medium charcoal concentrations, very weak subangular blocky to massive structure, friable consistency, abrupt boundary	floor (?)
E3	10YR 3/3, silt loam, common black and brown silt fragments and daub, massive structure, friable consistency, abrupt boundary	burned structure material
E4	10YR 4/3, silt loam, few yellow fine to medium gravel size clasts grading into a darker gray brown with fine charcoal and yellow fine to medium gravel-size clasts, massive structure, friable consistency, clear boundary	associated with structure
E5	2.5YR 5/2, silt, massive structure, dense but soft consistency, abrupt boundary	possible posthole or deformed zone associated with structure floor
E6	10YR 4/1, silt, common light mottles of ash and charcoal, intact localized lenses of ash and charcoal along the base of the zone at the N. end of profile, massive structure, soft consistence, abrupt boundary	disturbed deposits over structure floor
E6a	2.5Y 6/4, silt loam, massive structure, dense but soft consistence, abrupt boundary	floor remnant
E7	10YR 4/3, silt loam, massive structure, friable consistency, 10YR 3/1 lens of silt loam in center (thickness and expression varies N-S across the profile), abrupt irregular boundary over Zone F3	successive floors?

F1	10YR 4/1, silt, common light mottles of ash and charcoal, massive structure, soft consistence, abrupt boundary	?
F2	7.5YR 5/8, silt loam, massive structure, very friable to rigid consistency, abrupt boundary	extensive floor, part of large burned building
F3	7.5YR 5/8, silt loam, massive to cloddy structure, very friable to rigid consistency, common clasts (variable sizes appear broken in place), localized charcoal concentrations, abrupt boundary	same floor as Zone F2, more fragmented with charcoal lenses
F4	10YR 4/3, silt loam, cloddy to weak subangular blocky structure, friable consistency, abrupt boundary	small pit, intruded through Zone F2 and G3, portions of these zones collapse into upper portions of the pit
G1	10YR 3/2, silt loam, weak subangular blocky to massive structure, friable consistency, clear boundary	may represent earlier prepared surfaces truncated by Zones F2/F3
G2	complex lenses <1cm (from top to bottom) 10YR 6/6, 5YR 4/6, 2.5Y 4/4, 10YR 3/1, 7.7YR 3/3, variable consistencies, upper zone very friable and contains calcined bone, abrupt boundaries	floors extending into the north profile of the trench indicate thin but dense occupation debris and prepared surfaces.
G3	10YR 5/3, silt loam, lenticular mottles and clasts, massive structure, dense but soft consistency, abrupt boundaries	disturbed plaster surfaces
G4	10YR 4/2, silt loam, common medium charcoal fragments, weak to moderate subangular blocky, friable consistency, clear smooth boundary	homogeneous zone, bioturbated, function unknown from the profile
G5	laminated 10YR 3/1 and 10YR 5/8, silt, massive structure, dense but soft consistency, abrupt boundary	prepared surface remnants
G6	7.5YR 3/1, silt loam, few localized zones with increasing charcoal and daub clasts, weak subangular blocky structure, clear boundary	homogeneous zone, bioturbated, buried surface?
H1	7.5YR 4/1, silt loam, many fine to medium gravel-size wood charcoal fragments, mottled with 10R 5/2 silt clasts, weak subangular blocky structure, friable to soft consistence, clear smooth boundary	concentrated ash and wood charcoal dump
I1	10YR 4/2, silt loam, few to common fine to medium gravel-size clasts of daub, charcoal and various artifacts, subangular blocky structure, common worm tubules, friable consistency	cumulative exposed surface, highly bioturbated, dispersed artifacts and faint lenses suggesting localized zones have been mixed and faded due to bioturbation
I1a	localized 2 cm thick, slightly concave, 10YR 2/2, silt loam, many charcoal and ash clast fragments, common burned sediment fragments, massive structure, friable consistency, abrupt boundaries	visible remnant of localized burned deposit, part of cumulative surface that is Zone I1.

Table 2

Trench 2 Stratigraphic Descriptions, 2005 Season

Zone	Description	Preliminary Field Interpretation
A1	10YR3/1, silt loam, granular structure, very friable consistency, abundant roots, mixed artifacts, clear wavy boundary	Current A or surface horizon, probably includes backdirt from previous excavations and looting
A2	10YR 2/1, silt loam, granular structure, very friable consistency, mixed artifacts, abundant roots, clear smooth boundary (abrupt in some locations)	plowzone
A3	10YR 2/2, silt loam, weak subangular blocky and granular structure, friable consistency, clear boundary	possible early deep plowzone
A4	10YR 4/1, silt loam, cloddy structure, friable consistency, clear boundary	pit originates in the upper Dacian zones or in the plowzone, unclear
B1	10YR4/1, silt loam, cloddy structure, very friable consistency, dense wood charcoal located on the east edge of pit	mixed fill?
B2a	10YR 5/1, silt to silt loam, massive to granular structure, very friable consistency, few unsorted artifacts, clear irregular boundary	Dacian Period zone overlying pit fill
B2	10YR 5/2, silt loam, granular to cloddy structure, friable, few unsorted artifacts, clear irregular boundary	Dacian Period pit fill, truncated
B3	10YR 6/1, silt to silt loam, friable consistency, weak granular to massive structure, few artifacts, common roots, clear irregular boundary	Dacian Period?, homogeneous gray deposit that appears across the site
B4	10YR 6/3, silt loam, abundant unsorted clasts of 10YR 8/2 CaCO3 concentrations and nodules and nodule fragments, few fine to medium gravel-size daub (7.5YR 5/6), friable consistency, abrupt boundary	possible plaster dump?
B5	10YR 3/1, silt loam, granular structure, very friable consistency, infilled burrows of B4 material along the upper boundary, gradual wavy boundary	Ab horizon?
B6	10YR 4/3, silt to silt loam, granular to weak subangular blocky structure, friable consistency, abrupt boundary	burned deposit?
B7	7.5YR 4/2, silt loam, mottled, granular to weak subangular blocky structure, friable consistency, clear to irregular boundary	Bronze Age massive deposit
B8	10YR 3/2, silt loam, cloddy structure, friable consistency, abrupt boundary	Dacian Period pit fill
C1	10YR 4/1, silt loam, few medium to large gravel-size clasts of rigid silt (5YR 5/6), granular to weak subangular blocky structure, friable consistency, abrupt boundary	massive fill?
C2	10YR 2/1, loam, very friable, abundant charcoal and burned sediment clasts, abrupt boundary	burned zone above prepared floor

C3	10YR 6/6, silty clay, rigid, massive structure, abrupt boundary	burned prepared floor
C4	10YR5/1, silt loam, common sand-size to fine gravel-size yellow daub fragments, granular to massive structure, very friable, clear boundary	mixed ash
C5	10YR 2/1, loam, abundant charcoal and burned sediment clasts, abrupt boundary	burned zone above prepared floor
C6	10YR 6/8, silty clay, rigid, massive structure, abrupt boundary	burned prepared floor, deformed
C7a	10YR 6/8, silty clay, rigid, massive structure, abrupt boundary	burned prepared floor, remnant, deformed
C7	10YR 4/3, silt to silt loam, loose to friable consistency, common variably sized artifacts, abrupt boundary	loose mixed fill overlying more massive fill or pit, partially
		bioturbated, could be smoothed substrate for floor, deformed
C8	7.5YR 5/6, silty clay, massive structure, coarse gravel-size rigid clasts	possible post hole filled with coarse gravel-size fired daub fragments
C9	10YR 2/1, loam, abundant charcoal and burned sediment clasts, abrupt boundary	burned zone above prepared floor
C10	10YR 2/1, silt loam, rigid clasts (reduced daub rubble), abrupt boundary	stacked intact stratigraphy broken away and slumped into the edge of pit
C11	10YR 5/3, silt loam, friable consistency, abrupt boundary	
C12	10YR 5/3, silt loam, abundant fine gravel-size fragments of silty clay (10YR 3/2, rigid), abrupt boundary	
C13	10YR 4/4, silt loam, common fine to medium gravel-size artifacts and construction material, cloddy structure, friable consistency, clear boundary	Dacian Period collapsed bell shaped pit
C14a	10YR7/2, loam, common localized mixed carbonate clasts, mixed along upper boundary by bioturbation	remnants of discarded (?) carbonate construction material
C14	10YR 5/1, silt to silt loam, massive to granular structure, few to common unsorted artifacts, clear irregular boundary	Dacian Period zone
C15	10YR 5/3, silt loam, mixed soil material and clasts of "intact" strata, variable boundaries	reworked strata, perhaps due to trampling or activities "outside" structures, some subzones are deformed
D1	5YR 4/2, silt loam, few to common unsorted fine gravel-size burned (5YR 5/8), silty clay clasts, clear boundary	discontinuous prepared surface mixed with fill material
D2	10YR 5/4, silt loam, weak subangular blocky to granular structure, friable consistency, below 10YR8/1 silt lens	disturbed surface overlying mixed fill
D3	10YR 4/3, silt loam, abundant fine to medium daub clasts	burned material mixed into fill

D4	10YR 5/4, silt loam, common fine gravel-size burned and unburned daub and other artifacts, weak subangular blocky to granular structure, friable, clear boundary	Bronze Age fill, suggested as a leveling episode, over a sequence of house floors, does not appear to be a pit
D5	10YR 4/4, silt loam, few fine gravel-size rigid silt clasts and charcoal, weak subangular blocky to granular structure, friable consistency, abrupt boundary	Bronze Age fill, following the final destruction of the structure(s) below
D6	5YR 5/6, silt, massive structure, rigid, abrupt boundary	burned construction material
D7	5YR 5/8, silt, loose to friable consistency, massive structure	unburned construction sediments
E1	5YR 5/6, silty clay, rigid consistency, abrupt boundary	burned prepared surfaces
E2	10YR 8/2, silt loam, localized fine gravel-size daub, friable, abrupt boundary	surface with fill beneath with very thin white silt lens at the base and daub frags in interior
E3	10YR 2/1, silt loam, rigid, horizontally oriented clasts, abrupt boundary	black burned mixed sediment containing horizontally oriented thin burned clasts of plaster
E4	10YR 5/2, silt loam, massive structure, friable consistency, common clasts of 10YR 6/3 silt, abrupt boundary	broken floor?
E5	5YR 5/6, silty clay, massive structure, rigid consistency, abrupt boundary	red burned surface with thin lens of black silt on top
E6	multiple lenses, 10YR 5/2, silt, massive structure, very friable consistency, abrupt boundary	multiple plaster floors
E6	10YR 5/3, silt loam, cloddy structure, friable consistency, abrupt boundary	fill
E7a	10YR 4/4, silt loam, abundant fine gravel-size daub clasts (5YR 5/8, silty clay), cloddy structure, friable consistency, abrupt boundary	mixed burned material in fill
E7	10YR 5/1, silt loam, finely laminated, abruptly overlying 10YR 6/4, silt loam, cloddy structure, abrupt boundary	fill zone overlain by multiple ashy lenses
E8	5YR 4/3, silt loam, loose, cloddy structure, common mixed medium to coarse gravel-size daub (5YR 5/8 and 5YR 4/6), abrupt boundary	burned daub fragments in mixed fill
E9a	5YR 2.5/1, silt, massive structure, abrupt boundary	consistent black burned sediment
E9	5YR 3/4, silt loam, granular to weak subangular blocky structure, friable consistency, homogeneous, abrupt boundary	fill
E10	5YR 3/3, silt loam to silt, common burned sediment clasts and charcoal fragments, weak subangular blocky structure, friable consistency. North of pit (B8), well expressed thin, slightly irregular, gray silt lenses	reworked burned material, north of the B8 pit closer to the source (better expressed)
E11	10YR 5/3, silt loam, mixed soil material and coarse gravel-size fired daub fragments concentrated at the base of small pit	possible post hole with daub fragments at the base and adjacent beaten clay surface

E12	10YR 6/6, silty clay, massive to granular structure, friable consistency, abrupt boundary	Poorly defined in profile, appears to be associated with burned structure(s). Truncated to the east and west in this profile and cannot be correlated with other strata
E13	10YR 5/1, silt loam, common mixed charcoal fragments, weak subangular blocky structure, friable consistency, abrupt boundary	
E14	5YR 5/6, silt, rigid consistency, abrupt boundary	
E15	5YR 4/2, silt loam, common charcoal fragments, clear boundary	ash and charcoal
E16	7.5YR 5/1, silt, few fine gravel-size charcoal fragments, massive structure, dense, friable consistency, common olive (5Y 4/4) mottles, horizontally oriented artifacts (e.g. ceramics, mussel shell, bone)	Late Bronze Age mixed fill in intrusive pit
E17	laminated 10YR 5/3, silt, common mixed charcoal fragments	laminated ash and charcoal at the base of a large pit, bedding suggested
E18	multiples silt lenses, 10YR 6/6 and 10YR 4/4,massive structure, friable consistency, abrupt boundaries	fine laminar floors covered in a fine lens of black reduced silt (burned surface)
E19	10YR 6/4, silt, massive structure, very friable consistency, common fine to medium gravel-size clasts of burned and unburned construction material over a reduced (black) surface	mixed structural debris overlying a burned surface (collapsed wall?)
E20	10YR 5/2, silt loam, fine gravel-size fragments of construction material, weak subangular blocky to granular structure, friable consistency, abrupt boundary over thin burned silt lens	mixed fill over burned floor
E21	multiple <5 mm thick uniform lenses of 10YR 5/2, silt and 10YR 6/3 silt, abrupt boundary	stacked multiple prepared floors
E22a	10YR 5/1, silt, common fine gravel-size construction material and charcoal	ash lens
E22b	10YR 7/4, silt, rigid, massive structure, abrupt boundary	broken floor mixed with burned debris
E22	10YR 5/4, silt loam, common fine to medium gravel-size rigid silt angular clasts, loose to friable, granular to weak subangular blocky structure, abrupt boundary	mixed fill over burned floor
E23	10YR 5/1, silt loam, abundant fine gravel and sand-size charcoal, granular to weak subangular blocky structure, friable	ash and charcoal
E24	10YR 4/2, silt loam, common medium to coarse gravel-size construction material and artifacts, cloddy structure, friable consistency	Bronze Age fill zone in bell shaped pit, intruded by later pit above (C13)
E25	7.5YR 2.5/1, silt loam, subangular blocky structure, very friable consistency, abrupt boundary	burned silt (reducing atmosphere)
E26	10YR 4/1, silt loam, friable, granular to weak subangular blocky structure, abrupt boundary	base alternating "plaster-like" silts

E28	10YR 5/2, silt loam, common medium gravel-size daub and charcoal fragments, massive structure, loose and friable consistency, abrupt boundary	reduced black silt and charcoal covered by burned silt (daub) with more massive, homogeneous lenses in-between. To the south truncated by later pit excavation and to the north sloping downward (reason cannot be determined in profile)
E29	10YR 6/2, silt loam, common to abundant fine gravel-size daub fragments, massive structure, loose consistency, abrupt boundary	
E30	various 10YR & 5YR silt lenses, massive structure (color and hardness vary due to heating), over a lens of black reduced rigid silt, abrupt boundary	
E31	lenses of 10YR 6/6 and 10YR 5/1 silt, massive structure, soft and loose consistency, abrupt internal boundaries	
F1	10YR 6/8, silt loam, rigid consistency, abrupt boundary	burned finely laminated daub, part of larger surface that extends south and east
F2	10YR 3/2, dense silt, massive consistency, friable, abrupt boundary	curves along the base of F1, deformed floor?
F3	10YR 5/1, mixed fibrous ash, loose consistency, abrupt boundary	possible pit cut by E16
F4	10YR 5/4, silt loam, multiple lenses, massive structure, friable consistency, abrupt boundary	deformed floors
F5	10YR 5/3, silt loam, weak subangular blocky structure, friable consistency, clear boundary	mixed soil material, visible in the adjacent profile to the south, deformed massive deposits with thin lenses of slack water deposits(?)
F6	10YR 4/1, silt loam, common mixed charcoal fragments, massive structure, friable consistency, dense, abrupt boundary	compressed ash and charcoal deposit
F7	lenses of 10YR 3/2, dense silt, divided by fine rigid silt lenses (10YR 5/1). These black lenses often have white microlenses at their contacts. Curve up and pinch out at the north boundary (edge of pit E16)	burned floors? Their pinched up edge against the lower portion of the pit suggest perhaps the lower portion of the pit was in use at the time the floors were prepared
F8	2.5YR 4/2, silt loam, common mixed charcoal and silt clasts (2.5Y 6/6)	cumulative fill
F9	10YR 5/2, silt loam, mixed concentrated ash and fine to medium gravel-size charcoal with horizontally oriented large bone and daub (highly fired) concentrations, loose to very friable, 1 cm thick charcoal marks upper abrupt boundary,	cumulative ash (ash disposal area?)
F9a	10YR 7/1, silt, few fine wood charcoal fragments, massive structure, loose consistency, abrupt boundary	concentrated ash deposit
F9b	2.5YR 5/2, silt, massive structure, abrupt boundary	?
F10	2.5YR 5/2, silt, massive, loose (soft)	?
F11	variable thin continuous lenses of silt (10YR grays), a less defined southern extension of Zone F12	discontinuous prepared surface mixed with fill material

F12	variable thin continuous lenses of silt (variable 10YR grays), >10 lenses within 10 cm thickness	consecutive "plaster" floors
F13	concentrated rigid silt clasts (mixed red, yellow and black) with olive mottles in the limited 7.5YR 4/3, silt matrix	daub rubble
F14a	laminated irregular fibrous gray silt	ashed textile? thatch?
F14	variable colors (gray pink, black, red), rigid silt clasts (variable sizes),	fallen wall debris, beneath F14a - more intact; above F14a - more fragmented and reduced
G1	7.5YR 4/2, dense silt, broken fine lenses of thin regular 7.5YR 6/2, abrupt boundary	resemble slack water deposits that have been broken and tilted. Perhaps represent "outside" muddy area that later dries and is disrupted due to loading above
G2	silt coarse gravel-size clasts, 10YR 5/4, massive structure, loose consistency, abrupt boundary	irregular masses of silt construction material, unburned fallen wall?
G3	silt lenses, variable thicknesses, 7.5YR 5/1, massive structure, few gravel-size charcoal, abrupt boundaries	cumulative ash (ash disposal area?)
G4	7.5YR 4/1, silt loam, laminated variable ash zones. Upper lens contains irregular, localized lenses of coarse material (massive, loose, silt, 2.5YR 6/3), abrupt boundaries	debris accumulation from burned structure, possibly leveled prior to new floor
G5	7.5YR 5/1, silt, few fine gravel-size charcoal fragments, massive structure, dense, friable consistency, common olive (5Y 4/4) mottles, horizontally oriented artifacts (e.g. ceramics, mussel shell, bone)	cumulative surface "outside" (?) a structure
G6	7/5YR 4/2, silt loam, abundant fine to medium gravel-size charcoal and fired and unfired daub	possible wall fall
G7	10YR 4/2, silt loam, massive structure, common fine gravel-size daub fragments, common olive (5Y 4/4) mottles, slightly irregular boundary	cumulative sediments mixed with plant material
G8	7.5YR 4/2, mixed silt loam, common coarse gravel-size charcoal and daub (7.5YR 5/8 & 4/6, unsorted) fragments, abrupt boundary	uneven upper boundary due to dense clasts
G9	7.5YR 2.5/3, silt loam, massive structure, friable consistency, clear boundary	thin lens abruptly beneath black reduced zone, slightly deformed floor
G10	10YR 3/2, silt loam, massive structure, very friable consistency, horizontally oriented artifacts (e.g. mussel shell), gradual boundary	cumulative zone? Intruded by post hole
G11	10YR 5/4, silt, massive structure, very friable consistency, abrupt boundary	possible plaster surface or wall fall heated due to fire beneath

NOI CERCETĂRI ARHEOLOGICE LA PECICA-ŞANŢUL MARE

Rezumat

Situl arheologic de la Pecica-*Şanţul Mare* se numără printre cele mai importante aşezări ale epocii bronzului din Europa. Situl este amplasat strategic pe cursul râului Mureş, între zonele bogate în minereuri cuprifere din partea vestică a Munţilor Carpaţi şi comunităţile din Bazinul Carpatic şi nu numai, care utilizau pe scară largă metalul. Stratigrafia rezultată în urma unei îndelungate locuiri a fost utilizată de cercetători ca reper cronologic pentru întreaga epoca a bronzului din Europa răsăriteană.

În cursul lunii noimbrie a anului 2003, Muzeul Banatului din Timişoara, Muzeul Judeţean Arad şi Muzeul de Antropologie a Universităţii din Michigan (Statele Unite ale Americii) au demarat discuţiile privind cercetarea sitului arheologic de la Pecica- *Şanţul Mare*. În urma unei succinte cercetări de teren din primăvara anului 2004, în vara anului 2005 a fost demarată o primă campanie de cercetări arheologice sistematice al cărei obiective principale au fost cunoaşterea întregii secvenţe stratigrafice a sitului, în special cea a epocii bronzului, precum şi realizarea unei cronologii a întregii regiuni, bazată pe mostrele radiocarbon recoltate în cursul acestei săpături. În completarea acestor obiective s-a stabilit şi grosimea depunerii antropice prin sondarea întregului sit şi a terenului din imediata vecinătate cu ajutorul unei foreze manuale. Totodată a fost realizată şi ridicarea topografică a zonei, iniţiindu-se realizarea unei baze de date GIS.

În urma cercetărilor arheologice din vara anului 2005 pot fi enunţate câteva concluzii preliminare. Sondarea tell-ului şi a zonei din imediata vecinătate au relevat faptul că locuirea de epoca bronzului a fost mult mai mare, întinzându-se şi în imediata vecinătate a sitului. Şanţul de apărare eponim, pe baza acestui sondaj, este târziu dacă nu chiar ulterior locuirii de epoca bronzului. Numărul mare de cuptoare şi vetre de foc de la Pecica-*Şanţul Mare* sugerează o intensă activitate metalurgică, această ipoteză fiind susţinută de fragmentele de zgură şi artefacte din bronz, deosebit de abundente, în pofida caracterului limitat al cercetării.

Analiza preliminară a materialului osteologic descoperit în cursul acestei campanii indică o economie alimentară bazată în special pe utilizarea

animalelor domestice (ovicaprine, vite, cai) decât pe cele obținute prin vânătoare și pescuit.

Locuințele descoperite în cursul acestei campanii sunt mai mari decât cele aparținând culturii Mureș, descoperite în Ungaria, nefiind exclusă nici posibilitatea ca acestea să aibă chiar mai multe etaje. Evidențele radiometrice sugerează o creștere masivă și într-un timp relativ scurt a straturilor aparținând perioadei de la sfârșitul epocii bronzului. Densitatea complexelor arheologice indică, de asemenea, că în decursul epocii bronzului au avut loc ample lucrări de reamenajare și reconstrucție.

Cercetările arheologice viitoare ne vor permite nu numai să verificăm validitatea acestor ipoteze preliminare dar și să înțelem mai bine complexitatea socială a comunităților epocii bronzului de pe valea Mureșului.

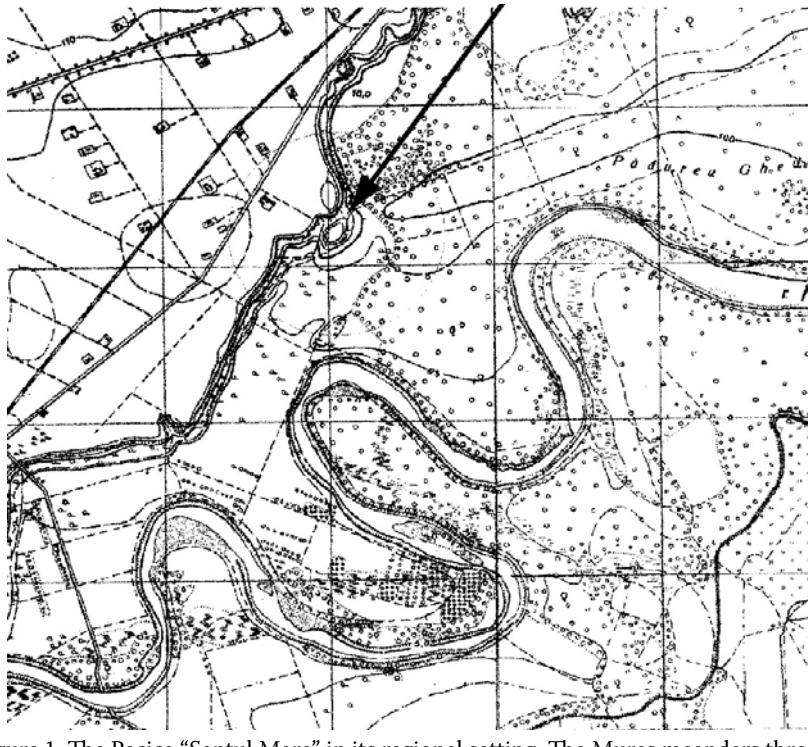


Figure 1. The Pecica "Şanțul Mare" in its regional setting. The Mureș meanders through the central portion of the map. The black arrow indicates the location of the Pecica tell.

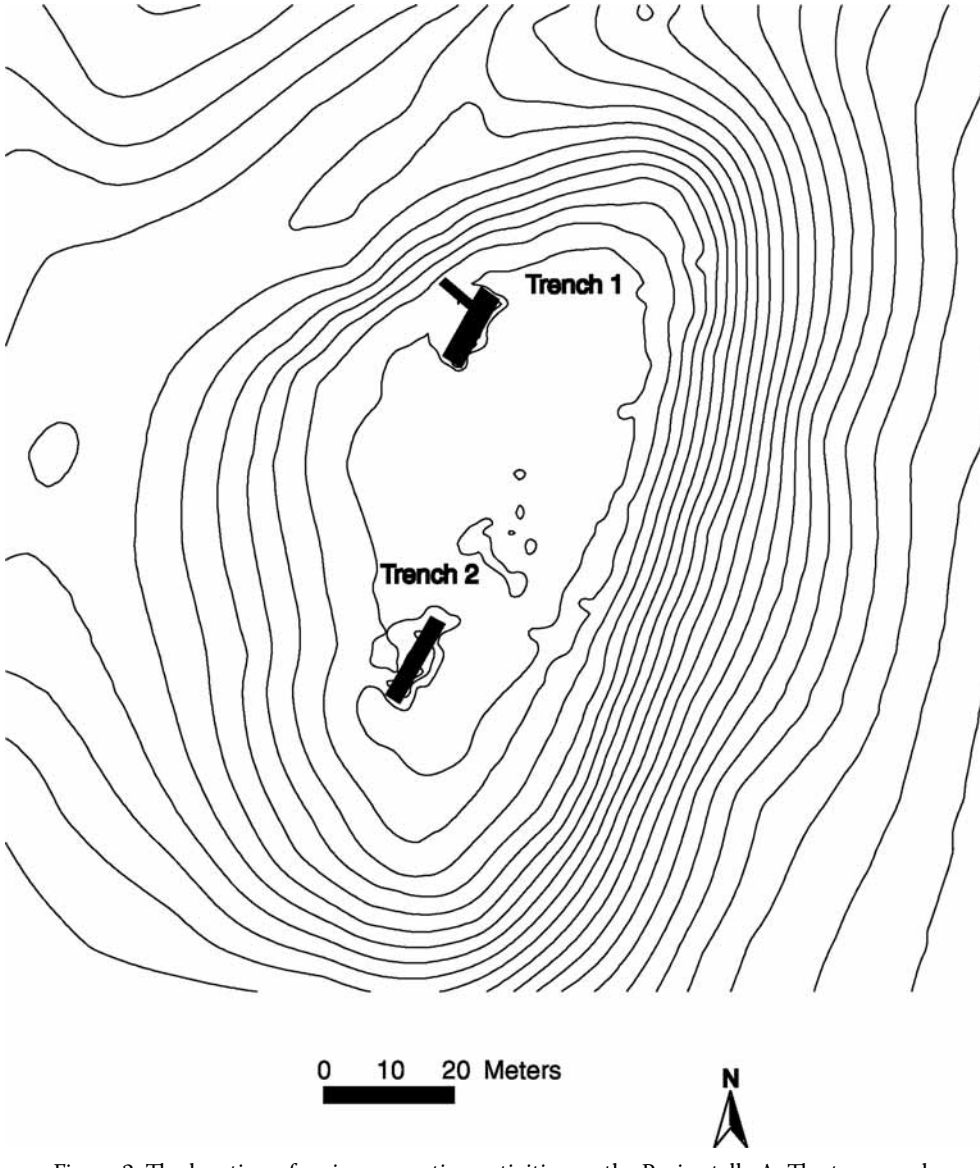
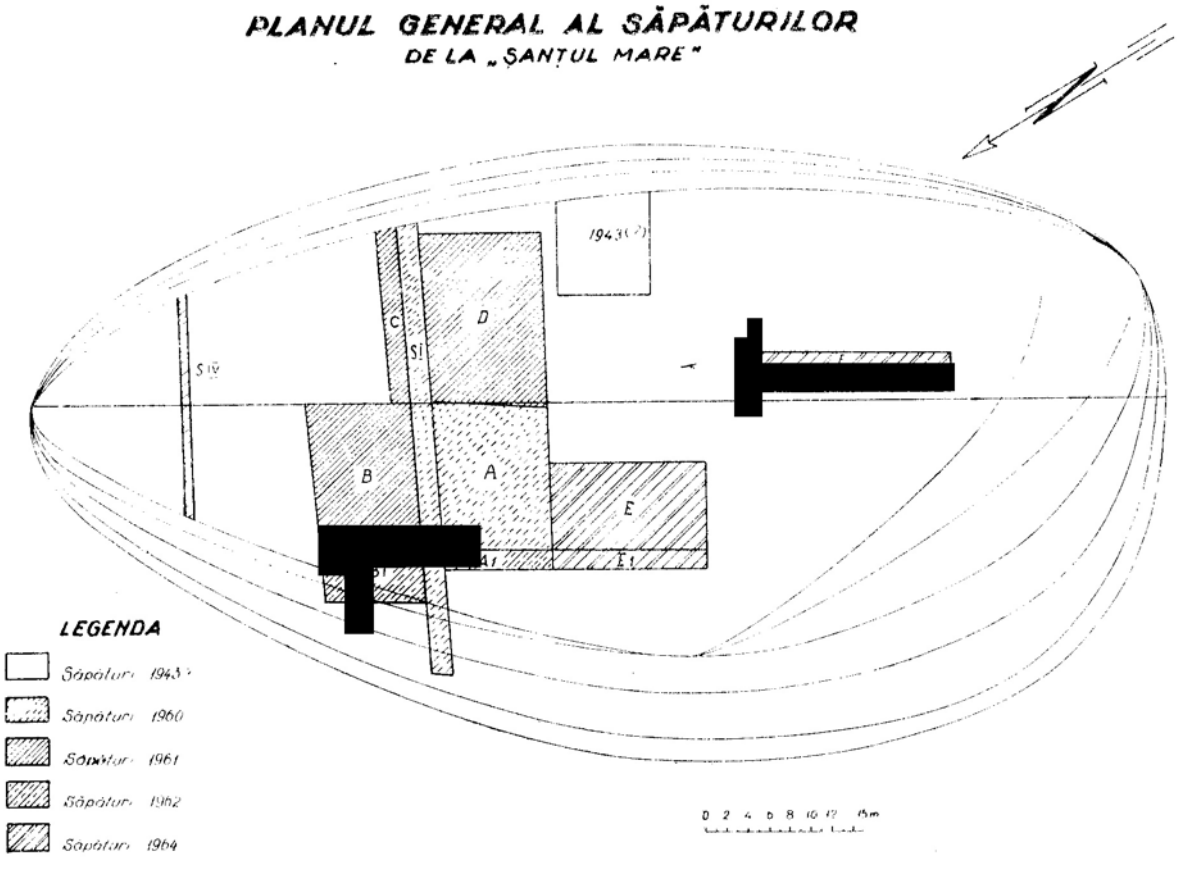


Figure 2. The location of major excavation activities on the Pecica tell. A The topography of the main tell is shown, along with the location of the two stratigraphic trenchs excavated during the 2005 season.



B The stratigraphic trenchs superimposed onto the plan of Crișan's excavation units from the 1960's.

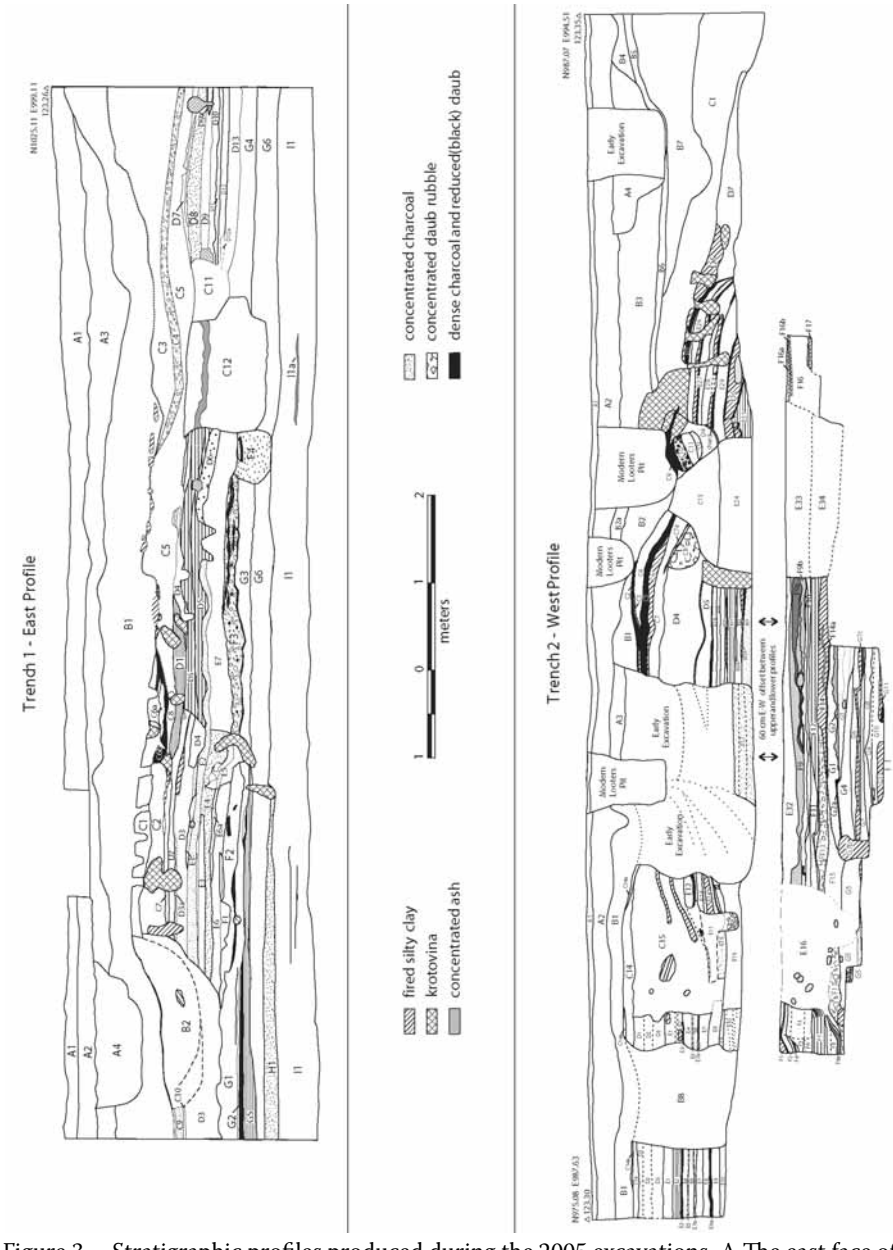


Figure 3 Stratigraphic profiles produced during the 2005 excavations. A The east face of Trench 1. B The west face of Trench 2. Descriptions of the layers are provided in Tables 1 and 2.

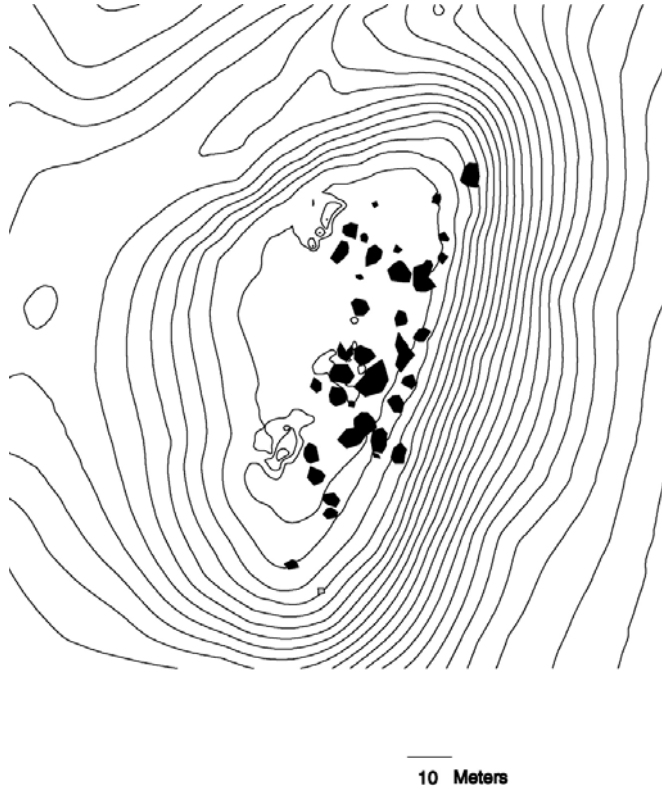


Figure 4. Modern looting at Pecica "Șanțul Mare". A Pits visible on the site surface in the spring of 2004. B Looters' pits mapped in 2005 superimposed onto the site plan.

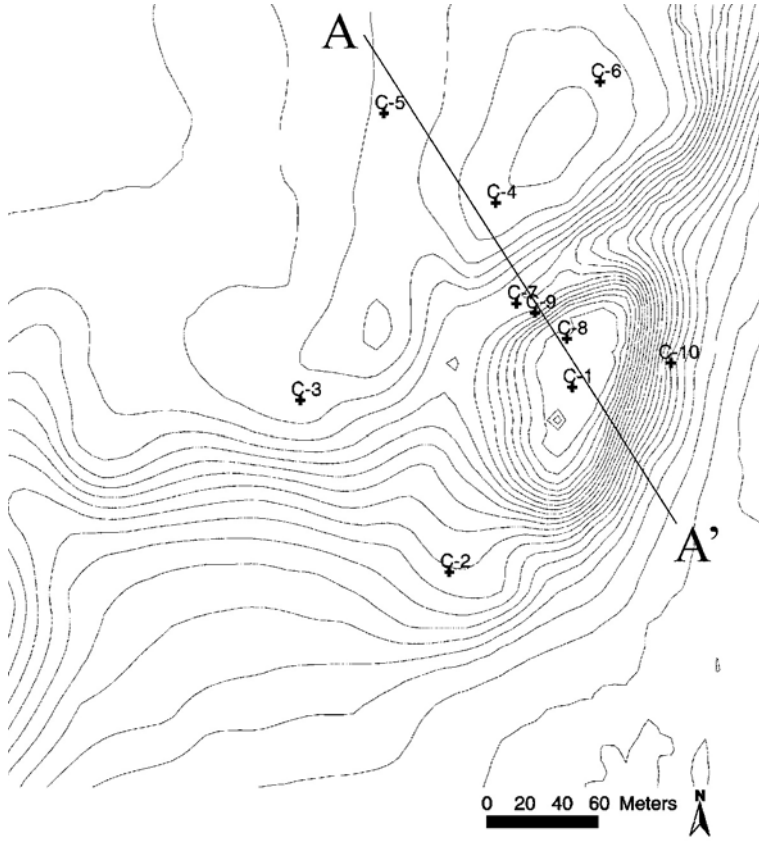


Figure 5. The location of deep core samples collected during the 2005 season.
The line A-A' is the axis on which the cross-sectional view of the site (Figure 6) is based.

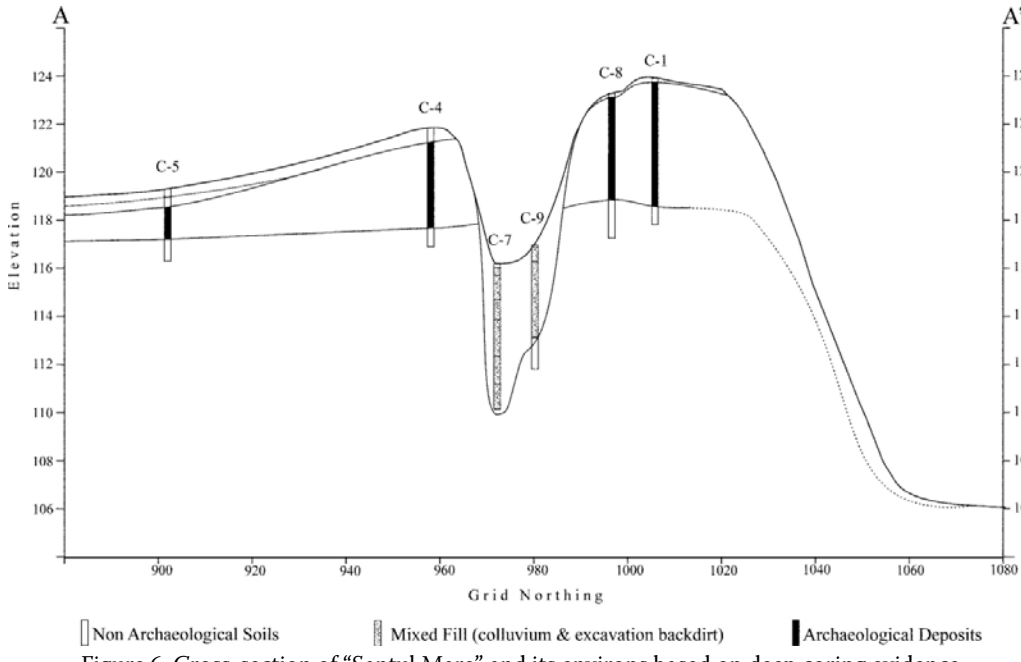


Figure 6. Cross-section of "Şanțul Mare" and its environs based on deep coring evidence

Figure 7. Area of multiple stratified ovens, Trench 2, Feature 31.

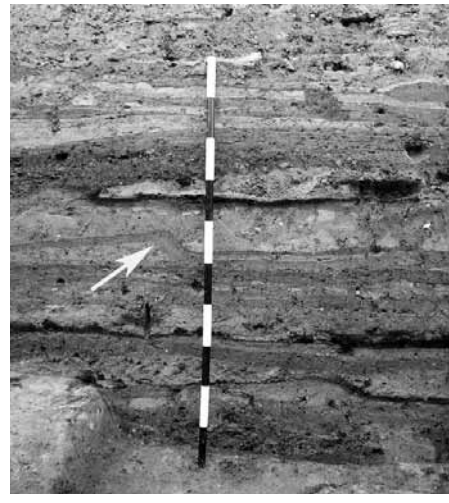


Figure 8. Photograph illustrating a stratigraphic anomaly associated with Pecica house floors. 'Wave feature is marked by arrow. Scale is one meter.

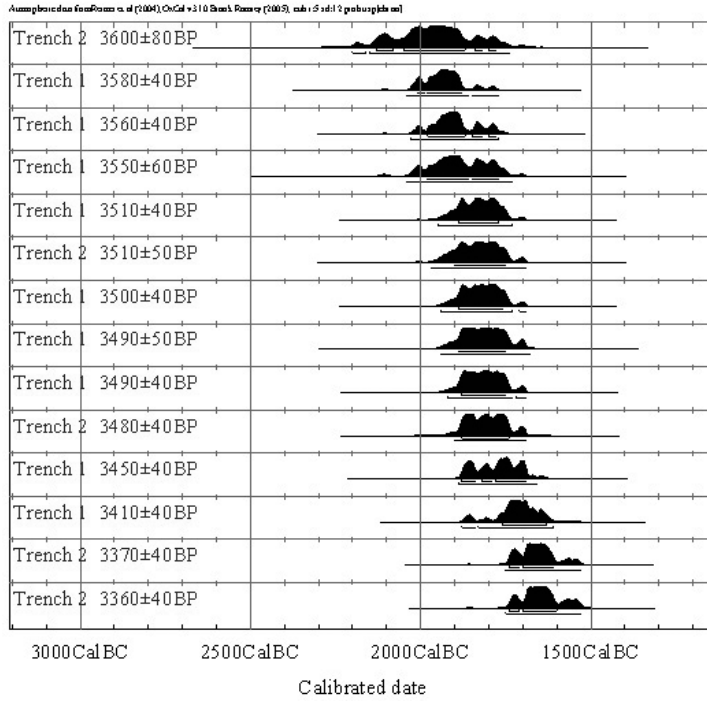


Figure 9. Calibrated dates with two sigma ranges for upper portion of Pecica "Şanţul Mare" profiles.