

AN OVERVIEW OF THE BRONZE AGE TELL-SETTLEMENT IN TOBOLIU  
(BIHOR COUNTY, ROMANIA)

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**Abstract** *Așezarea de epoca bronzului de la Toboliu-Dâmbu Zănăcanului este cunoscută în literatura de specialitate încă de la jumătatea secolului al XX-lea. Cercetări arheologice propriu-zise au fost efectuate în anii 60 și 70 ai secolului trecut de către Nicolae Chidioșan, Sever Dumitrașcu și Doina Ignat. Noi cercetări au fost inițiate în anul 2014, fiind continuate până în prezent. În urma acestor cercetări s-a constatat că este vorba despre o așezare multi-stratificată atribuită stilului ceramic Otomani care a funcționat pe parcursul bronzului mijlociu (cca. 2000/1900-1600/1500 BC). Partea centrală a sitului este reprezentată de o movilă antropică, înconjurată de două șanțuri concentrice și o așezare secundară de mari dimensiuni.*

**Cuvinte-cheie** *Epoca bronzului, stilul ceramic Otomani, tell, Toboliu*

**Keywords** *Bronze Age, Otomani, tell-site, Toboliu*

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## Introduction

Although the precise definition of a Bronze Age tell settlement in the Carpathian Basin is still a matter of debate in the existing research (Gogâltan 2002: 23-24; Gogâltan 2008: 40; Gogâltan 2014: 14), the notion broadly refers to an artificial, stratified mound created through the successive accumulation of debris from large surface constructions made of clay and having a wooden structure. Often, tell settlements were fortified or enclosed by ditches and/or earthen ramparts (Gogâltan 2008; Jaeger 2016; Kienlin et al. 2018). From a chronological viewpoint, the Bronze Age tell settlements in the Carpathian Basin developed between ca. 2500 and 1600/1500 BC (Gogâltan 2005; Kienlin 2012: 274-279; Kienlin 2015: 33-67; Gogâltan 2017). Their distinctive characteristics were noticed by historians and

history enthusiasts since the 18th century. Many of these artificial mounds were subsequently investigated through field-walks, excavations and, in recent times, remote sensing methods. Nevertheless, several essential aspects related to their appearance, evolution and subsequent demise remain open to debate. Bronze Age tell settlements in the Carpathian Basin have a set of defining features: a mound-like shape visible in the landscape, complex stratigraphic sequences with multiple architectural phases, fortifications or enclosing elements, and surrounding “satellite” settlements. However, the latter two features may not be encountered at every tell site. Taking these aspects into consideration, as well as the many still unanswered questions regarding their development and function, it is not surprising that the study of tell settlements remains appealing for so many researchers.

Beginning with the 19<sup>th</sup> century, numerous tell settlements were archaeologically investigated using the methods available at the time (Kovács 1988; Gogâltan 2014: 13-14). Long and narrow trenches, designed to facilitate the collection of artefacts (in order to create relative chronologies, establish local cultural groups and enrich museum collections) were favoured in many cases. However, much of the information obtained through these early investigations is obsolete, difficult to evaluate or completely lost. More recent excavations have been conducted in the tell settlements from Carei *Bobald* (Molnár & Némethi 2014, with the previous literature), Kakucs *Baladomb* (Jaeger & Kulcsár 2013), Kakucs *Turján* (Jaeger et al. 2018), Mošorin *Feudvar* (Falkenstein et al. 2016, with the previous literature), Orešac *Židovar* (Ljuština 2013, with the previous literature), Pecica *Șanțul Mare* (Nicodemus and O'Shea 2015, with the previous literature), Polgár *Kenderföld* (Dani et al. 2003), Százhalombatta *Földvár* (Poroszlai & Vicze 2005; Stig Sørensen & Vicze 2013), Túrkeve *Terehalom* (Csányi & Tárnoki 2013, with the previous literature), and Vráble *Fidvár* (Bátora et al. 2012, with the previous literature), yielding a much needed fresh set of data. Besides the excavation of individual tells, in the last decades several research projects covering larger areas have also developed, most of them employing non-invasive investigations in order to better understand Bronze Age tells and their settlement systems. Such projects have been conducted in the Benta Valley (Earle and Kristiansen 2010; Earle et al. 2014; Klehm and Nyíri 2016), the Hernád Valley (Fischl 2012; Fischl & Kienlin 2013; Fischl et al. 2015), the Criș/Körös Valley (Duffy 2014), the Kakucs area (Jaeger & Kulcsár 2013; Kulcsár et al. 2014; Jaeger et al. 2018), the Borsod Region (Kienlin et al. 2018), the Ier Valley (Molnár & Nagy 2013; Kienlin & Marta 2014; Kienlin et al. 2017) and in Western Romania (Gogâltan et al. 2014).

### History of research

The tell settlement from Toboliu *Dâmbu Zănăcanului* has been known in the archaeological literature ever since the beginning of the previous century, as several artefacts were collected from the surface of the site in 1904. Other field-walks were conducted in the area by the history teacher Eugen Potoran, who also recorded the location of the settlement (Fazecaș 2014: 111). The first

archaeological excavations were undertaken in 1960 by Nicolae Chidioșan (Chidioșan 1960). Subsequent excavations in 1965 and 1966 were led by Sever Dumitrașcu (Dumitrașcu 1989? 119). In 1968 and 1972 N. Chidioșan returned to excavate at the site, this time accompanied by Doina Ignat (Chidioșan 1974: 156). Unfortunately, the results of the above investigations remained mostly unpublished, with the exception of several incomplete drawings of the stratigraphic sequence and a few notes regarding some artefacts and pottery decoration. Based on vessel types and decoration, S. Dumitrașcu proposed a new cultural entity in the area which he called Girișu de Criș - Alceu (Dumitrașcu 1989: 120-126, pl I- IX). In 1977 a stone axe was discovered on the surface of the site, which was subsequently interpreted as a prestige object (Ghemiș 2001: 663-670). In 2007 a field walk was conducted on the surface of the site in order to confirm its cultural assignment (Fazecaș 2014: 112-113). The site was mentioned by several authors, either in relation to other Otomani sites (Ordentlich 1970: 621; Ordentlich 1971: 24; Ordentlich 1973: 209; Ignat-Sava 1974: 37; Fazecaș 1997: 54) or when discussing Wietenberg, Suciu de Sus, Hatvan, Mureș and Vatină imports or influences (Chidioșan 1970: 289, fig 1-2; Bader 1972: 512; Chidioșan 1974: 155; Ordentlich 1974: 143, 145-146; Chidioșan 1980: 88-95; Boroffka 1994: 46, nr. 211).



Figure 1. The location of Toboliu in Western Romania

Excavations in Toboliu were resumed in 2014. These recent investigations were conducted within the project *Living in the Bronze Age tell settlements. A study of settlement archaeology at*

the eastern frontier of the Carpathian Basin (CNCS–UE FSCDI –PN-II –ID –PCE-2012–4020) developed by the Institute of Archaeology and History of Art Cluj-Napoca in collaboration with Criş County Museum (Gogăltan et al. 2014). Since 2016 the University of Cologne has also been involved in the research of the site, thus securing the continuity of the Toboliu Project until the

present day. The investigations consisted of archaeological excavations, topographic surveys, systematic field-walks, geomagnetic measurements, core drilling and aerial photography (Fazecaş et al. 2015: 235–236; Fazecaş et al. 2016: 101–102; Fazecaş et al. 2017: 146–147; Găvan et al. 2018).



Figure 2. Overview of the site in Toboliu Dâmbu Zănăcanului (Photo by Marian Adrian Lie)

### General presentation of the site

The Middle Bronze Age tell settlement from Toboliu *Dâmbu Zănăcanului* is located in Bihor County, Western Romania, close to the Romanian-Hungarian border (Fig. 1). Although the site was previously part of the Girişu de Criş municipality, it now belongs to the administrative territory of the Toboliu municipality (as established in 2007). For this reason, the site is also known in previous research as Girişu de Criş *Alceu* (Fazecaş 2014: 113). From a geographic perspective, the tell settlement is located at the boundary between the Crişul Repede floodplain and the High plain of Miersig (Berindei et al. 1992: 127). South of the settlement flows a local stream, which today has a seasonal character and is being channelled downstream; together with the Alceu River, this stream forms a marshy area located west of the tell settlement. We have all reasons to believe that, prior to the construction of dams and channels, the

wetland covered a more significant territory, resulting in a landscape considerably different from the one we see today (Fig. 2). The archaeological site is a complex one, consisting of an artificial mound, two enclosing ditches, and a large outer settlement surrounding the tell itself. The mound, which rises approximately 4 meters above the surrounding plain, has a round shape and a diameter of 95 meters (Fig. 3). As previously mentioned, two concentric ditches are enclosing the tell. Based on topographic measurements, we estimate that both ditches were approximately 10 meters wide, enclosing an area of about 1.6 hectares.

Since the recent excavations have only focused on the mound itself, without incorporating any of the ditches, it remains unknown whether they were in use simultaneously or not. A distinctive feature of the site in Toboliu is the large outer settlement surrounding the central mound.

A systematic field-walk was conducted in



2015, covering a surface of 211 hectares around the tell (Fig. 4).

Although archaeological material assigned to the Middle Bronze Age (Hungarian-Transylvanian chronology according to Gogâltan 2015: 53-95) was found scattered on a surface of about 158 hectares, the actual outer settlement most likely covered 57 hectares, which probably reflects periodic shifts of inhabited areas over time, rather than a large, contemporaneous settlement (Fazecaș

& Lie 2018, in press). Regarding the ceramics found during the systematic field-walk, a large percentage of the pottery fragments could be assigned to the Otomani ceramic style (*sensu lato*). However, pottery fragments typical for other Middle Bronze Age cultures were also uncovered, the most frequently encountered being typical for the Wietenberg style. Pottery fragments dating to the Sarmatian period were also found east of the prehistoric settlement.

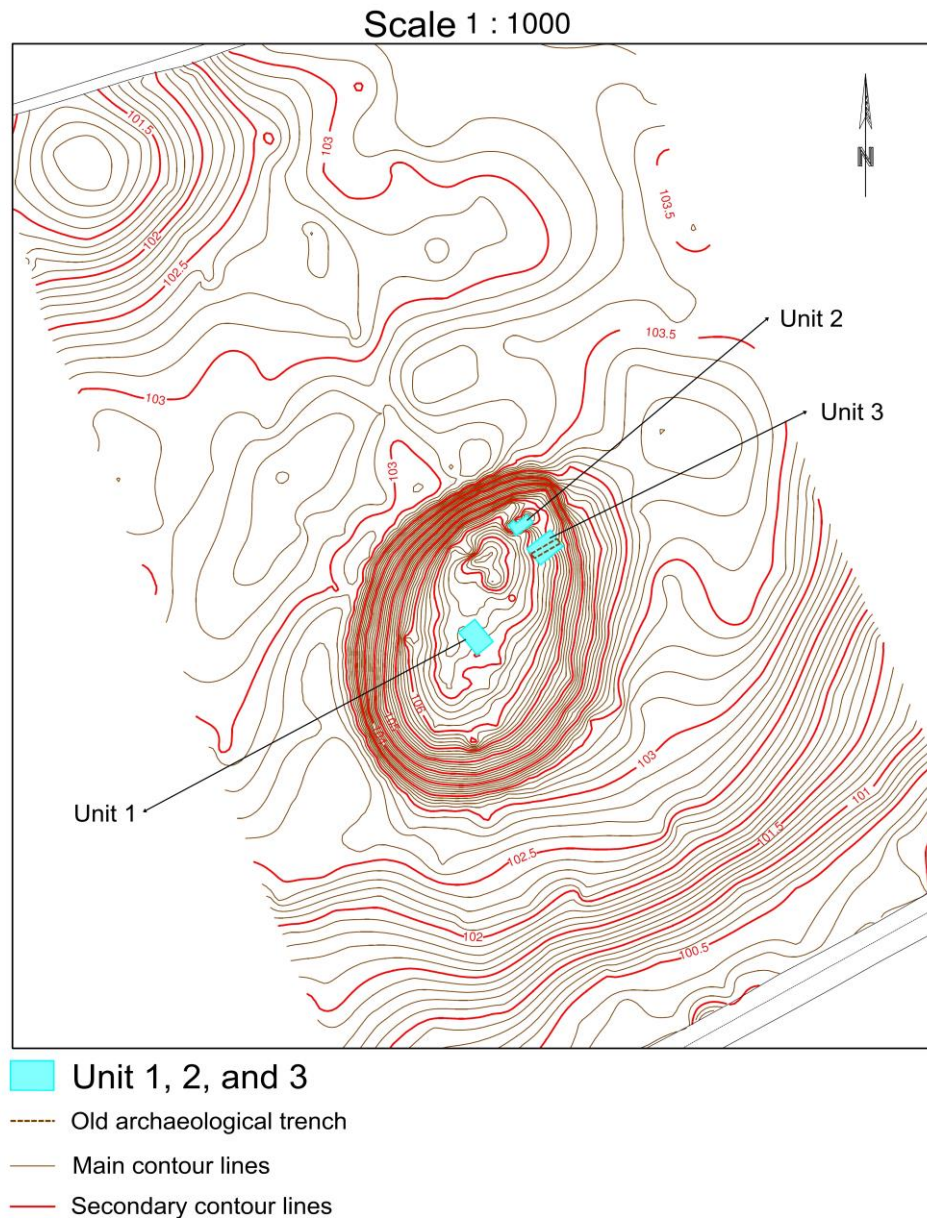


Figure 3. Toboliu Dâmbu Zăcănelui – topographic map with the location of the trenches from 2014–2017 seasons (Map by Infinit Land Survey SRL)





Figure 4. Distribution of the finds around the tell settlement (black dots - individual pottery shards; yellow dots - clusters of pottery shards; red dots - association of pottery and adobe) (after Fazecaș & Lie 2018)

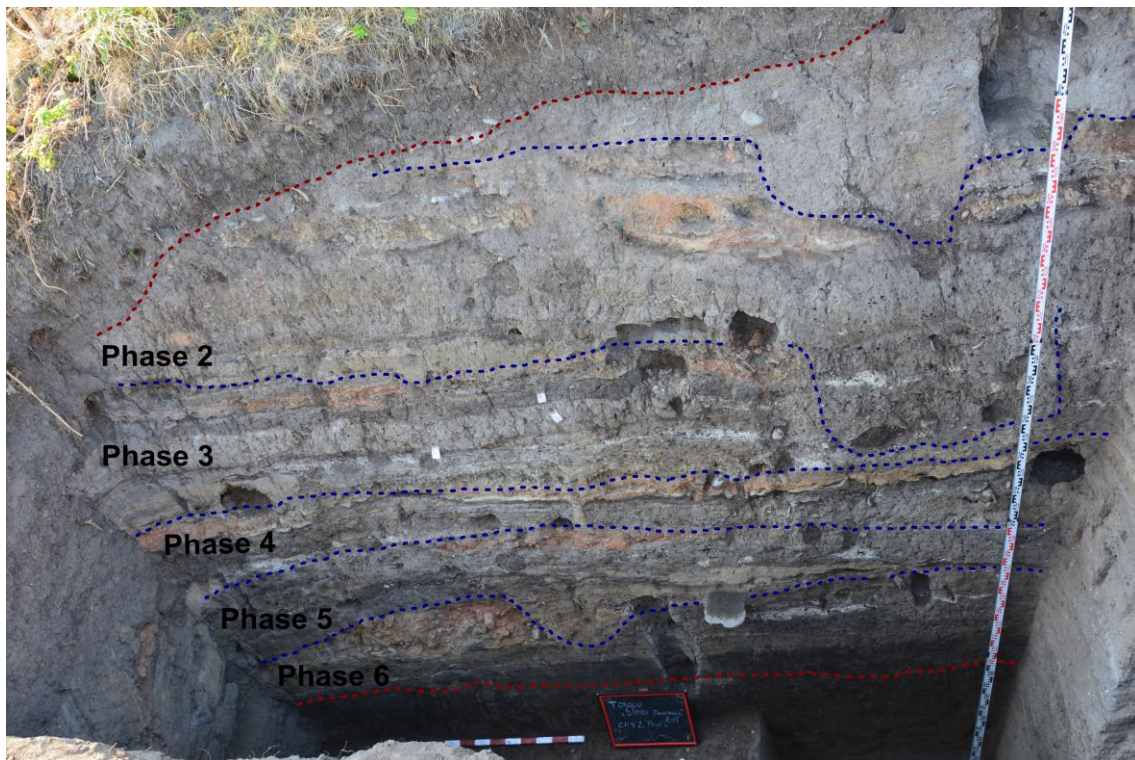


Figure 5. Toboliu Dâmbu Zănăcanului – Profile of Trench 2 (Photo by Marian Adrian Lie)





Figure 6. Rows of modern graves in Trench 1 (drawing by Marian Adrian Lie)

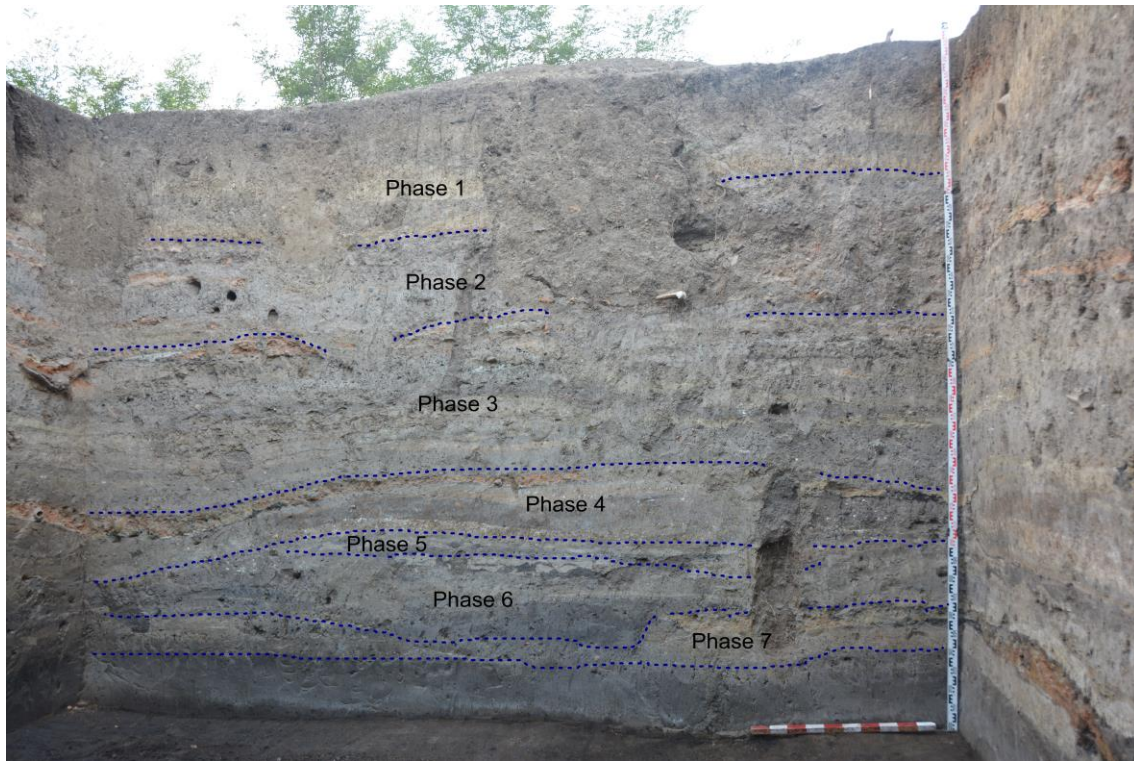


Fig. 7. Toboliu Dâmbu Zănăcanului – Northern profile of Trench 1 (Photo by Marian Adrian Lie)

The excavations initiated in 2014 were only conducted on the central mound, where three trenches were open (Fig. 2). The first unit (Trench 1), measuring 5×7 m, was located in the central part of the mound, in the area of maximum elevation. The second unit (Trench 2), measuring 2×4 m, intentionally overlapped an older archaeological trench, the only one that was still visible on the surface. The aim was to re-examine the stratigraphic sequence and to obtain a quick overview without damaging undisturbed layers. The third unit (Trench 3), measuring 5×7 m, was located in the north-eastern part of the mound in a rather marginal area. After removing the top soil, we had the unpleasant surprise of uncovering an older archaeological trench, which basically cut our trench in two.

The second Unit (Trench 2) was completed in 2015, revealing a stratigraphic sequence consisting of five occupation phases. The maximum depth of the trench was 4.8 m. However, excluding the top eroded layer and the virgin soil at the bottom, the actual cultural deposits were around 3.2 m thick (Fig. 5). Considering the nature of this trench, only a few archaeological features were still *in situ*, while the very narrow width of the trench did not

allow any further interpretations regarding potential architecture elements. Nonetheless, this trench proved to be very helpful in understanding the site and its formation. It also provided us with an overview of the general chronology as well as the pottery styles encountered on the tell.

Excavations in the 3rd trench were conducted over the course of three campaigns. Underneath the topsoil, patches of compact adobe were identified, most likely representing the debris of a collapsed house. The pottery uncovered here corresponds to the last stages of the Otomani ceramic style (approximately 1600–1500 BC). After removing the debris, fragments from a yellow clay floor were revealed in the NW corner of the unit, covering a surface of approximately 1.5×3 m. Unfortunately, we cannot make any assumptions regarding the initial measurements of the entire structure. On top of the yellow floor there were two oval hearths with imbedded pottery fragments. One of the hearths had two phases and probably functioned over a longer period of time. Due to logistical constraints, we were unable to continue working in this trench and we decided to focus our efforts in completing Trench 1, which at the time was in a more advanced state of

investigation and also had potential to offer more data.

The most consistent results were obtained in Trench 1, which was completed in 2017. In the central part, the tell was overlapped by a modern cemetery corresponding to a nearby farm which functioned during the 19<sup>th</sup> century. In total, 13 graves were identified, out of which seven were fully excavated. The other six were extending outside the limits of our trench (Lie et al. 2015: 261–282) (Fig. 6).

The graves were disposed on three parallel rows with an orientation which follows the Christian norm. Only one of them contained an adult, the rest being infant and child burials (Lie et al. 2015: 261–282). The uppermost Bronze Age layers were partially disturbed by these graves, however some *in situ* features were still preserved. The prehistoric settlement phases were labelled with numbers starting from the uppermost (youngest) phase. A total of seven occupation phases (corresponding to architectural construction and abandonment sequences) were documented in a 4 m thick stratigraphic sequence (Fig. 7).

Although they do not rigidly follow the same pattern, these phases are characterized by the existence of clay floors, debris coming from household activities, as well as collapsed walls. Only in some instances the collapsed structures were unburned (Phases 5 and 7), while phase 6 contained both burned and unburned structures. Regarding architectural elements, for phase 1 and 2 we were unable to determine the size and orientation of the surface constructions, due to disturbances caused by the aforementioned graves as well as further post-depositional processes. A rather uncommon feature uncovered in phase 2 was a dugout rectangular structure (exposed on an area measuring 2.4×3 m), which cut through the older archaeological deposits in the SE part of the excavation block.

The construction uncovered within the 3rd phase was by far the most substantial one, showing evidence of floor renewal. Both floor phases were made of wooden planks with clay substructures. Thanks to the second clay substructure, the initial wooden floor was very well preserved (Fig. 8). The structure corresponding to this floor was probably oriented on a E-W axis, measuring at least 4.80 m in width and more than 5.80 m in length (since its margins extended outside of the excavated area). The wooden planks were oriented N-S and measured approximately 0.2×3.40 m.

Both wooden floors had an associated hearth build on top of the planks, with six, respectively five renewal phases.

Underneath this construction, the entire surface of the trench was covered by the burnt debris coming from the collapsed walls of another house corresponding to the next occupation phase of the tell (Phase 4). Among the debris, we uncovered many complete pottery vessels, while underneath it there was another hearth, built on the house floor. Based on the outline of its corresponding clay floor, we estimate that this house was larger than 5.8×8m and was oriented on a N-S axis. On the southern part of this structure, there was a potential porch or small hallway separated from the main compartment by beam impressions and a row of postholes.

In Phase 5 we found the first unburned structure, whose collapsed walls consisted of chunks of yellow and dark clay bearing twig impressions. On the southern side of the structure, we also uncovered evidence of large preserved wooden elements. The size of the clay platform corresponding to this sequence is 4.20×7.60 m. The original length of the house was longer, as again its northern part continued outside the limits of the trench. Furthermore, the structure had three separate rooms, well defined by rows of postholes and beam impressions (Fig. 9). Both the southern and northern rooms had an individual hearth.

The subsequent house, corresponding to the 6th phase, was also unburned, with debris very similar to the preceding one. However, in the northern corner of the trench we unearthed remains of a further, burned structure. The clay platform associated with the unburned house from this phase measured five meters in width and more than 6.6 m in length, being oriented on an East-West axis. Traces of a dividing wall were still visible inside the structure, therefore the house must have had at least two rooms. A circular hearth was identified in its western room. In the northern corner of the unit, at a distance of 1.6 m and roughly parallel, a second clay platform was uncovered. Due to the small exposed area, we cannot make any comments regarding the initial size and function of this structure.

The oldest occupation phase identified on the tell (Phase 7) had a similar destruction layer to the aforementioned ones, with chunks of mixed unburned clay. The structure was oriented similarly to the previous one (E-W), being 4.6 m wide and at least 8 m long. The house had three visible rooms



separated by beam impressions. A large circular hearth was unearthed in the southern room. In the central compartment, an atypical, U-shaped hearth was documented. Underneath the floor of this

house we reached the virgin soil, and no further archaeological material or features were uncovered.



Figure 8. Toboliu *Dâmbu Zănăcanului* – Wooden floor of structure in phase 3 of Trench 1 (Photo by Marian Adrian Lie)



Figure 9. Toboliu *Dâmbu Zănăcanului* – Clay floor of structure in phase 5 of Trench 1 (Photo by Marian Adrian Lie)

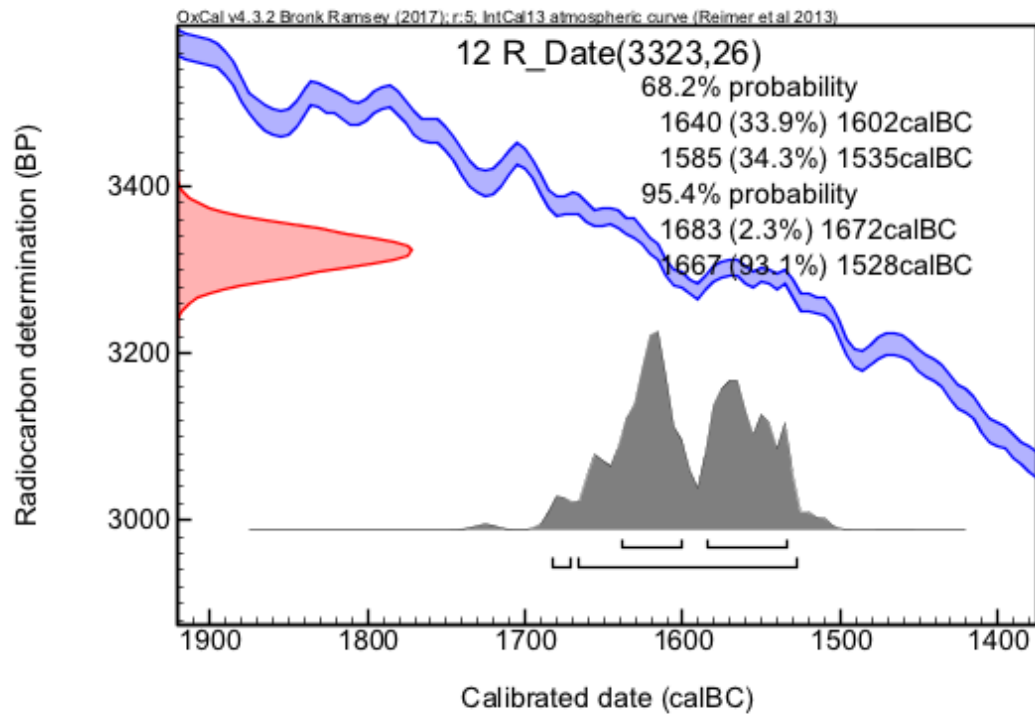


Figure 10. C14 sample from Phase 1 (Unit 1)

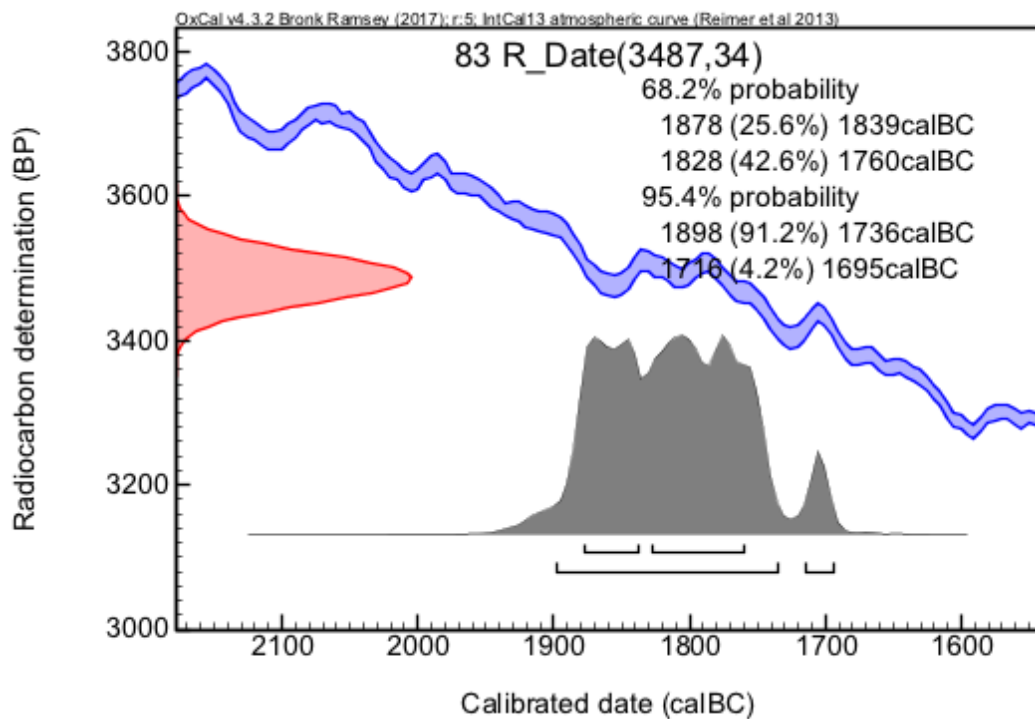


Figure 11. C14 sample from Phase 6 (Unit 2)



## Discussion

The site from Toboliu has many of the typical features characteristic for a Middle Bronze Age tell settlement in the Carpathian Basin. What sets this site apart however is the sheer size of its outer settlement. Regarding the overall stratigraphy, little information was provided in the previous literature. Although S. Dumitraşcu mentioned six individual phases, it is hard to interpret the profile drawings he published (Dumitraşcu 1989: Pl. I–IX; Fazecaş 2014: 114, Pl. 1). During our recent investigations, the stratigraphy of the site proved to be more complex (Fig. 7). Even if there are no direct stratigraphic links, the five phases identified in Trench 2 probably correspond to phases 2–6 in Trench 1. Based on some traces of charcoal and pigmentation found underneath the last clay platform in Trench 2, the existence of phase 7 was assumed before the complete excavation of Trench 1. For the sake of coherency, we will hitherto use the seven phases identified in Trench 1 as a point of reference. Several <sup>14</sup>C samples were collected from Trenches 1 and 2, some of which are still under analysis.

The available absolute dates indicate a time range between approximately 1683–1528 cal BC (sigma 2) (Fig. 10) for the first phase (collected in Trench 1) and 1898–1695 cal BC (sigma 2) (Fig. 11) for phase 6 (collected in Trench 2) (Gogăltan 2015: 73, Fig. 22; Fazecaş et al. 2016: 101–102). However, this estimate awaits confirmation from the other collected samples.

Considering that most of the archaeological finds are still being processed, we refrain from further interpretations at this stage. Hopefully, the new data will shed more light on the complexity of the social and economic life of the MBA community in Toboliu.

## References

- Bátora, J., Behrens, A., Gresky, J., Ivanova, M., Rassmann, K., Tóth, P., Winkelmann K., 2012. The Rise and Decline of the Early Bronze Age Settlement, Fidvár near Vráble, Slovakia. In: J. Kneisel, W. Kirleis, M. Dal Corso, N. Tayler, V. Tiedtke (eds), *Collapse or Continuity? Environment and Development of Bronze Age Human Landscapes, Proceedings of the International Workshop "Socio-Environmental Dynamics over the Last 12,000 Years: The Creation of Landscapes II (14th–18th March 2011)" in Kiel*. Volume 1. Bonn, 111–130.
- Berindei, I., Pop, G., Măhărea, Ghe., 1992. Câmpia Crişurilor. In: *Geografia României vol. IV-Regiunile pericarpătice, Dealurile şi Câmpia Banatului şi Crişanei, Podişul Mehedinţi, Subcarpaţii, Piemontul Getic, Podişul Moldovei*. Bucureşti.
- Boroffka, N., 1994. *Die Wietenberg-Kultur. Ein Beitrag zur Erforschung der Bronzezeit in Südosteuropa*. Bonn.
- Chidioşan, N., 1960. Jurnalul sondajului de la Girişu de Criş 1960, mss. Muzeul Țării Crişurilor, fond N. Chidioşan.
- Chidioşan, N., 1970. Contribuţii la cunoaşterea grupei Suciu de Sus în contextul epocii bronzului din Crişana. In: *Studii şi Cercetări de Istorie Veche* 21, 2, 287–293.
- Chidioşan, N., 1974. Sincronismele apusene ale culturii Wietenberg stabilite pe baza importurilor ceramice. In: *Crisia* IV, 153–176.
- Chidioşan, N., 1980. *Contribuţii la istoria tracilor din nord-vestul României. Aşezarea Wietenberg de la Derşida*. Oradea.
- Csányi M., J. Tárnoki J., 2013. A Dinner Set from a Bronze Age House in Level 2 of the Túrkeve-Terehalom Settlement. In: Al. Anders, G. Kulcsár, G. Kalla, V. Kiss, G.V. Szabó (Ed.), *Moments in Time. Papers Presented to Pál Raczky on His 60th Birthday*. Budapest, 707–724.
- Dani J., Sz. Máthé M., V. Szabó, G., 2003. Ausgrabungen in der bronzezeitlichen Tell-Siedlung und im Gräberfeld von Polgár-Kenderföld (Vorbericht über die Freilegung des mittelbronzezeitlichen Gräberfeldes von Polgár-Kenderföld, Majoros-Tanya). In: C. Kacsó (Hrsg.), *Bronzezeitliche Kulturerscheinungen im karpatischen Raum. Die Beziehungen zu den benachbarten Gebieten. Ehrensymposium für Alexandru Vulpe zum 70. Geburtstag* Baia Mare 10.13. Oktober 2001. Baia Mare, 93–118.
- Duffy, P. R., 2014. *Complexity and Autonomy in Bronze Age Europe. Assessing Cultural Developments in Eastern Hungary*. Budapest.
- Dumitraşcu, S., 1989. Contribuţii la cunoaşterea tehnologiei metalurgiei din epoca bronzului în judeţul Bihor. In: *Crisia* XIX, 119–168.
- Earle, T., Kristiansen K. (ed.), 2010. *Organizing Bronze Age Societies. The Mediterranean, Central Europe and Scandinavia Compared*. Cambridge.
- Earle, T., Kulcsár G., Kiss V., Serlegi G.,

- Szeverényi V., 2014. Recent results from the Bronze Age research into Benta Valley. In: *Hungarian Archaeology*. E-Journal, Summer, 2014, 1–5.
- Falkenstein, F., Hänsel, B., Medović, P., 2016. Feudvar near Mošorin (Serbia)-Excavations and Research in a Micro-region at the Confluence of the Danube and Tisza: a recapitulation after thirty years. In: H. Kroll, K. Reed, *Die Archäobotanik. Feudvar III*. Würzburg, 5–35.
- Fazecaș, G., 1997. Aspecte privind aşezările culturii Otomani de pe teritoriul României. In: *Crisia XXVI-XXVII*, 1996–1997, 51–65.
- Fazecaș, G., 2016. Girişu de Criş Alceu, Bihor County. In: Gogâltan et al. 2014, 11–116.
- Fazecaș, G., Lie, M., Cordoș, C., Gogâltan, Fl., 2015. Toboliu-Dâmbul Zănăcanului, campania 2014. In: *Cronica Cercetărilor Arheologice din România, campania 2014*, București, 235–236.
- Fazecaș, G., Lie, M., Cordoș, C., Gogâltan, Fl., 2016. Toboliu, com. Toboliu, jud. Bihor, Punct: Dâmbu Zănăcanului. In: *Cronica Cercetărilor Arheologice din România, Campania 2015*, Târgu Jiu, 101–102.
- Fazecaș, G., Lie, M., Cordoș, C., Drăgan, A., Gogâltan, Fl., 2017. Toboliu, com. Toboliu, jud. Bihor, Punct: Dâmbu Zănăcanului. In: *Cronica Cercetărilor Arheologice din România, Campania 2016*, București, 146–147.
- Fazecaș, G., Lie, M. A., 2018. Determinarea suprafeței sitului de epoca bronzului de la Toboliu-Dâmbu Zănăcanului. In: *Crisia XLVIII*, 29–38.
- P. Fischl K., 2006. *Ároktő-Dongóhalom bronzkori tell telep. Bronzezeitliche Tell-Siedlung in Ároktő-Dongóhalom*. Miskolc.
- P. Fischl, K., 2012. The Role of the Hernád Valley in the Settlement Structure of the Füzesabony Culture. In: M. Jaeger, J. Czebreszuk, K. P. Fischl (Eds.), *Enclosed Space-Open Society Contact and Exchange in the Context of Bronze Age Fortified Settlements in Central Europe*. Ponzán, Bonn 39–51.
- P. Fischl, K., Kienlin, T. L., 2013. Results of a systematic survey programme on the Hatvan sites of Emőd-Nagyhalom and Tard-Tatárdomb in northern Hungary. In: *Acta Archaeologica Hungarica* 64, 5–32.
- P. Fischl K., Kienlin, T. L., Tugya B., 2015. Bronze Age Settlement Research in North-Eastern Hungary. In: *Archeometriai Műhely* XII/2, 117–134.
- Găvan, Al., Lie, M. A., Fazecaș, G., Cordoș, C., Kienlin, T. L., Gogâltan, Fl., 2018. The birth of the bronze age tells at the eastern Carpathian Basin. Two case studies: Sântion and Toboliu. In: *24th EAA Annual Meeting Barcelona, 5-8 September 2018, Reflecting Futures, Abstract Book*, Volume I. Barcelona, 372–373.
- Ghemiș, C., 2001. Toporul de piatră de la Girişu de Criş jud. Bihor. In: L. Cornea, M. Drecin, B. Ștefănescu, A. Chiriac, I. Crișan (coord.), *Adevărul omeneste posibil pentru rânduirea binelui*. Oradea, 663–670.
- Gogâltan, Fl., 2002. Zur Terminologie der bronzezeitliche Tellsiedlungen im Karpatenbecken. In: A. Rustoiu, A. Ursuțiu (Hrsg.), *Interregionale und Kulturelle Beziehungen im Karpatenraum (2.Jht. v.Chr.-1. Jht. N.Chr.)*. Cluj-Napoca, 11–45.
- Gogâltan, Fl., 2005. Der Beginn der bronzezeitlichen Tellsiedlungen im Karpatenbecken: Chronologische Probleme. In: B. Horejs, R. Jung, E. Kaiser, B. Teržan, (Hrsg.), *Interpretationsraum Bronzezeit. Bernhard Hänsel von seinen Schülern gewidmet*. Bonn, 161–179.
- Gogâltan, Fl., 2008. Fortified Bronze Age Tell Settlements in the Carpathian Basin. A General Overview. In: J. Czebreszuk, S. Kadrow, J. Müller (Eds.), *Defensive Structures from Central Europe to the Aegean in the 3rd and 2nd millennia BC*. Poznań, Bonn, 39–56.
- Gogâltan, Fl., 2014. Bronze Age tell, tell-like and mound-like settlements on the eastern frontier of the Carpathian Basin. History of research. In: Gogâltan et al. 13–24.
- Gogâltan, Fl., 2015. The Early and Middle Bronze Age Chronology on the Eastern Frontier of the Carpathian Basin: Revisited after 15 Years. In: R.E. Németh, B. Rezi (eds), *Bronze Age Chronology in the Carpathian Basin. Proceedings of the International Colloquium from Târgu Mureș 2-4 October 2014*. Cluj-Napoca, 53–95.
- Gogâltan, Fl., 2017. The Bronze Age Multilayered Settlements in the Carpathian Basin (cca. 2500-1600/1500 BC). An old catalogue and some chronological problems. In: *Journal of Ancient History and Archaeology*, 4, 4, 28–63.
- Gogâltan, Fl., Cordos, C., Ignat, A. (eds.), 2014. *Bronze Age tell, tell-like and mound-like settlements at the eastern frontier of the Carpathian Basin. History of research*. Cluj-



- Napoca.
- Ignat-Sava, D., 1974. Girișu de Criș. In: S. Dumitrașcu (Red.), *Repertoriul monumentelor naturii, arheologice, istorice, etnografice, de arhitectură și artă din județul Bihor*. Oradea, No. 182, 36–37.
- Jaeger, M., 2016. *Bronze Age Fortified Settlements in Central Europe*. Poznań.
- Jaeger, M., Kulcsár G., 2013. Kakucs–Balla-domb a case study in the absolute and relative chronology of the Vátya culture. In: *Acta Archeologica Hungarica* 64, 289–320.
- Jaeger, M., Kulcsár G., Taylor, N., Staniuk, R. (eds.), 2018. *Kakucs-Turján a Middle Bronze Age multi-layered fortified settlement in Central Hungary*. Bonn.
- Kienlin, T. L., 2012. Patterns of Change, or: Perceptions Deceived? Comments on the Interpretation of Late Neolithic and Bronze Age Tell Settlement in the Carpathian Basin. In: T. L. Kienlin, A. Zimmermann (Hrsg.), *Beyond Elites: Alternatives to Hierarchical Systems in Modelling Social Formations*. International Conference at the Ruhr-Universität Bochum, Germany October 22-24, 2009. Bonn, 251–310.
- Kienlin, T. L., 2015. *Bronze Age Tell Communities in Context. An Exploration Into Culture, Society and the Study of European Prehistory. Part 1: Critique. Europe and the Mediterranean*. Oxford.
- Kienlin, T. L., Marta, L., 2014. New Geophysical Data on the Internal Structure of the Gáva Sites of Andrid-Corlat and Căuș-Sighetiu in North-Western Romania. In: T. L. Kienlin, P. Valde-Nowak, M. Korczyńska, K. Cappenberg, J. Ociepa (eds.), *Settlement, Communication and Exchange around the Western Carpathians. International Workshop held at the Institute of Archaeology, Jagiellonian University, Kraków, October 27–28, 2012*. Oxford, 381–403.
- Kienlin, T. L., P. Fischl, K., Marta, L., 2017. Exploring Divergent Trajectories in Bronze Age Landscapes: Tell Settlement in the Hungarian Borsod Plain and the Romanian Ier Valley. In: *Ziridava. Studia Archaeologica*, 31, 93–128.
- Kienlin, T. L., P. Fischl, K., Pusztai, T., 2018. *Borsod Region Bronze Age Settlement (BORBAS). Catalog of the Early to Middle Bronze Age Tell Sites Covered by Magnometry and Surface Survey*. Bonn.
- Klehm, C. E., Nyíri B., 2016. Exploring socioeconomic relationships from surface survey ceramics: New methodologies from Bronze-Age Benta Valley, Hungary. In: *Journal of Field Archaeology*, 41, 4, 486–499.
- Kovács T., 1988. Review of the Bronze Age settlement research during the past one and half centuries in Hungary. In: T. Kovács, I. Stanczik (Ed.), *Bronze Age Tell Settlements on the Great Hungarian Plain, I*, Budapest, 17–25.
- Kulcsár G., Jaeger, M., Kiss V., Márkus G., Müller, J., Pető Á., Serlegi G., Szevényi V., Taylor, N., 2014. The beginnings of a new research program-Kakucs archaeological expedition-KEX 1. In: *Hungarian Archaeology, E-Journal*, 2014, winter, 1–7.
- Lie, M. A., Radu, C., Fazecas, G., 2015. Cimitirul de secol XIX de la Toboliu-Dâmbul Zăneacului. In: *Terra Sebus. Acta Musei Sabesiensis*, 7, 261–282.
- Ljuština, M., 2013. Sudul Câmpiei Panonice în prima jumătate a mileniului II î.Hr. Studiu de caz: Židovar, Banatul de sud, Serbia. Southern border of the Panonian Plain in 1st half of 2nd millennium BC: Case study of Židovar, south Banat district, Serbia. In: *Istros*, XIX, 79–117.
- Molnár Zs., Nagy J. G., 2013. Habitat Models and Social Systems in Middle Bronze Age Central north-western Transylvania. State of research. In: *Acta Archeologica Carpathica* XLVIII, 5–85.
- Molnár Zs., Némethi J., 2014. Carei “Bobald = Bobáld”, Satu Mare County. In: Gogăltan et al. 2014, 40–60.
- Nicodemus, A., O’Shea, J. M., 2015. From relative to absolute: the radiometric dating of Mureș Culture ceramics at Pecica-Șanțul Mare. In: S. Forțiu, A. Stăvilă (ed.), *ArheoVest, Nr. III: [Simpozion ArheoVest, Ediția a III-a:] In Memoriam Florin Medeleș, Interdisciplinaritate în Arheologie și Istorie, Timișoara, 28 noiembrie 2015*, Szeged, 691–702.
- Ordentlich, I., 1970. Die innere Periodeneinteilung der Otomanikultur in Rumänien. In: J. Filip (Réd.), *Actes du VIIe Congrès International des Sciences Préhistoriques et Protohistoriques. Prague 21-27 aout 1966, I*. Prague, 619–622.
- Ordentlich, I., 1971. Aria de răspândire a culturii Otomani de pe teritoriul României. In: *Marmăria II*, 19–35.
- Ordentlich, I., 1973. *Cercetările de la Otomani și*

*Lie, M.A. et al., Gesta XVII/2 (2018), 63–76.*

*Sălacea și locul lor în contextul culturii Otomani.* Iași, teză de doctorat, mss.

Ordentlich, I., 1974. Aspecte privind cultura Otomani. In: *Crisia* IV, 135–151.

Poroszlai I., Vicze M. (Eds), 2005. *Százhalombatta Archaeological Expedition. SAX. Report 2-Field Season 2000-2003.* Százhalombatta.

Stig Sørensen, M. L., Vicze M., 2013. Locating Household Activities on a Bronze Age Tell. In: M. Madella, G. Kovacs, B. Kulcsarne-Berzsenyi, I. Briz i Godino (ed.), *The Archaeology of Household.* Oxford, 159–178.