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ABBREVIATIONS

AAR	Analecta Archaeologica Ressoviensia (Rzeszów)
ActaArch	Acta Archaeologica (Leiden)
ActaArchHung	Acta Archaeologica Academiae Scientiarum Hungaricae (Budapest)
ActaMusPapensis	Acta Musei Papensis. A Pápai Múzeum Értesítője (Pápa)
Agria	Agria. Az Egri Múzeum Évkönyve (Eger)
AJPA	American Journal of Physical Anthropology (New York)
Alba Regia	Alba Regia. Annales Musei Stephani Regis (Székesfehérvár)
AnB	Analele Banatului. Buletinul Muzeului din Timişoara (Timişoara)
Antaeus	Antaeus. Communicationes ex Instituto Archaeologico (Budapest)
AnthrAnz	Anthropologischer Anzeiger (München)
AnthrK	Anthropológiai Közlemények (Budapest)
Antiquity	Antiquity. A Review of World Archaeology (Durham)
AÖ	Archäologie Österreichs (Wien)
Apulum	Apulum. Acta Musei Apulensis (Alba Iulia)
AR	Archeologické Rozhledy (Praha)
ArchA	Archaeologia Austriaca (Wien)
ArchBulg	Archaeologia Bulgarica (Sofia)
ArcheoSciences	ArcheoSciences. Revue d'Archéométrie (Rennes)
ArchÉrt	Archaeologiai Értesítő (Budapest)
ArchHung	Archaeologia Hungarica (Budapest)
Archiv für Anthropologie	Archiv für Anthropologie. Völkerforschung und kolonialen Kulturwandel (Braunschweig)
ArchKözl	Archaeologiai Közlemények (Budapest)
Arrabona	Arrabona. A Győri Xantus János Múzeum Évkönyve (Győr)
ASM	Archeologické Studijní Materiály (Praha)
AUB	Annales Universitatis Budapestinensis de Rolando Eötvös Nominatae (Budapest)
AVANS	Archeologické Výskumy a Nálezy na Slovensku (Nitra)
Balcanica	Balcanica. Annuaire du Comité Interacadémique de Balkanologie du Conseil des Académies des Sciences et des Arts de la R. S. F. Y. et de l'Institut des Etudes Balkaniques (Beograd)
BAR-IS	British Archaeological Reports – International Series (Supplementary) (Oxford)
BBV	Berliner Beiträge zur Vor- und Frühgeschichte (Berlin)
bioRxiv	bioRxiv. The Preprint Server for Biology
BRGK	Bericht der Römisch–Germanischen Kommission (Berlin)
BROB	Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek (Amersfoort)
BudRég	Budapest Régiségei (Budapest)
CommArchHung	Communicationes Archaeologicae Hungariae (Budapest)
Crisia	Crisia (Oradea)
CurrAnt	Current Anthropology (Chicago)

DissArch	Dissertationes Archaeologicae ex Instituto Archaeologico Universitatis de Rolando Eötvös nominatae (Budapest)
DMÉ	A Debreceni Déri Múzeum Évkönyve (Debrecen)
DocPraehist	Documenta Praehistorica (Ljubljana)
Dolg	Dolgozatok az Erdélyi Múzeum Érem- és Régiségtárából (Kolozsvár)
Dolgozatok	Dolgozatok a Magyar Királyi Ferencz József Tudományegyetem Archaeologiai Intézetéből (Szeged)
DuDolg	Dunántúli Dolgozatok (Pécs)
DuSz	Dunántúli Szemle (Szombathely)
EJA	European Journal of Archaeology (London)
Építés-Építészettudomány	Építés- Építészettudomány. A Magyar Tudományos Akadémia Műszaki Tudományok Osztályának Közleményei (Budapest)
EurAnt	Eurasia Antiqua. Zeitschrift für Archäologie Eurasiens (Bonn)
FAM	Fontes Archaeologiae Moravicae (Brno)
FolArch	Folia Archaeologica (Budapest)
FontArchHung	Fontes Archaeologici Hungariae (Budapest)
FrK	Földrajzi Közlemények (Budapest)
FSI	Forensic Science International. Genetics
FtK	Földtani Közlöny (Budapest)
GCBI	Godišnjak Centra za Balkanološka Ispitivanja Akademije Nauka i Umjetnosti Bosne i Hercegovine (Sarajevo)
Germania	Germania. Anzeiger der Röm.-Germ. Kommission des Deutschen Archäologischen Instituts (Mainz)
Gesta	Gesta. Historical Review (Miskolc)
HHR	The Hungarian Historical Review (Budapest)
HOMÉ	A Herman Ottó Múzeum Évkönyve (Miskolc)
HungArch	Hungarian Archaeology. E-Journal (Budapest)
JAA	Journal of Anthropological Archaeology (New York)
JAHA	Journal of Ancient History and Archaeology (Cluj-Napoca)
JAR	Journal of Archaeological Research (New York)
JAS	Journal of Archaeological Science (London)
JFA	Journal of Field Archaeology (Boston)
JFS	Journal of Forensic Sciences (Chicago)
JHE	Journal of Human Evolution (New York)
JIES	The Journal of Indo-European Studies (Washington, D. C.)
JLS	Journal of Lithic Studies (Edinburgh)
JPMÉ	A Janus Pannonius Múzeum Évkönyve (Pécs)
JWP	Journal of World Prehistory
KMK	A Komárom megyei Múzeumok Közleményei (Tata)
KMMK	Komárom-Esztergom Megyei Múzeumok Közleményei (Tata)
KRMK	A Kaposvári Rippl-Rónai Múzeum Közleményei (Kaposvár)
Marisia	Marisia. Studii şi Materiale. Muzeul Judeţean Tîrgu Mureş (Tîrgu Mureş)
MatArchSlov	Materialia Archaeologica Slovaca (Nitra)
MCA	Materiale şi Cercetări Archeologice (Bucureşti)
Menga	Menga. Revista de prehistoria de Andalucía. Journal of Andalusian Prehistory (Antequera)
MFMÉ	A Móra Ferenc Múzeum Évkönyve (Szeged)
MFMÉ StudArch	A Móra Ferenc Múzeum Évkönyve – Studia Archaeologica (Szeged)

MKCsM	Múzeumi Kutatások Csongrád Megyében (Szeged)
MRT	Magyarország Régészeti Topográfiája (Budapest)
Musaica	Musaica Archaeologica. Zborník Filozofickej Fakulty University Komenského (Bratislava)
Nartamongæ	Nartamongae. The Journal of Alano-Ossetic Studies. Epic, Mythology and Language (Vladikavkaz)
OA	Opuscula Archaeologica (Zagreb)
Ossa	Ossa. International Journal of Skeletal Research (Solna)
Ősrégészeti Levelek	Ősrégészeti Levelek. Prehistoric Newsletter (Budapest)
PBF	Prähistorische Bronzefunde (München)
PLoS One	PLoS One. E-Journal (San Francisco)
PNAS	Proceedings of the National Academy of Sciences (Washington, D. C.)
Pravěk	Pravěk (Brno)
Preistoria Alpina	Preistoria Alpina (Trento)
PZ	Praehistorische Zeitschrift (Berlin)
QuaternaryInt	Quaternary International. The Journal of the International Union for Quaternary Research (Oxford – New York)
Radiocarbon	Radiocarbon. An International Journal of Cosmogenic Isotope Research (Tucson)
RégFüz	Régészeti Füzetek (Budapest)
SA	Советская Археология (Moskva)
Satu Mare	Satu Mare. Studii şi comunicări. Seria Arheologie (Satu Mare)
Savaria	Savaria (Szombathely)
SbČSA	Sborník Československé Společnosti Archeologické (Brno)
SCIV	Studii şi Cercetări de Istorie Veche (Bucureşti)
SlA	Slovenská Archeológia (Bratislava)
SMK	Somogyi Múzeumok Közleményei (Kaposvár)
Specimina Nova	Specimina Nova. Dissertationum ex Instituto Historiae Antiquae et Archaeologiae Universitatis Quinqueecclesiensis (Pécs)
SSz	Soproni Szemle (Sopron)
StComit	Studia Comitatensia (Budapest)
SzIKMK	A Szent István Király Múzeum Közleményei (Székesfehérvár)
Terra Sebus	Terra Sebus. Acta Musei Sabesiensis (Sebes)
Tisicum	Tisicum. A Jász-Nagykun-Szolnok Megyei Múzeumok Évkönyve (Szolnok)
UF	Ugarit-Forschungen. Internationales Jahrbuch für die Altertumskunde Syrien-Palästinas (Kevelaer – Neukirchen– Vluyn)
UPA	Universitätsforschungen zur prähistorischen Archäologie (Bonn)
VAH	Varia Archaeologica Hungarica (Budapest)
VetZoot	Veterinarija ir Zootechnika. A scientific journal and the Official Organ of the Veterinary Academy, Lithuanian University of Health Sciences (Kaunas)
VKT	Várak, kastélyok, templomok. Történelmi és örökségturisztikai folyóirat (Pécs)
VMMK	A Veszprém Megyei Múzeumok Közleményei (Veszprém)
VýP	Východoslovenský Pravek (Košice)
WMMÉ	A Wosinsky Mór Múzeum Évkönyve (Szekszárd)
ZalaiMúz	Zalai Múzeum (Zalaegerszeg)
ZbSNM	Zborník Slovenského Národného Múzea. Archeológia (Bratislava)
Ziridava	Ziridava. Studia Archaeologica (Arad)
ZSNM	Zbornik Slovenského Národného Múzea (Ljubljana)

FOREWORD FROM THE EXECUTIVE EDITOR

As with the previous (37th) issue of the Antaeus (Yearbook of the Institute of Archaeology), the present volume brings together a selection of research papers addressing a certain time period; the Bronze Age on this occasion. The current volume, despite containing fewer studies than the previous issues, is in line with the editorial board's ambition to publish a new volume at regular – annual – intervals, even at the expense of the overall length of the publication. With the aim to assemble a broad spectrum of Bronze Age research studies from the territory of Hungary, the current issue touches upon a wide range of themes stretching across the many hundreds of years of the Bronze Age period: from the facial reconstruction of an Early Bronze Age woman, to the domestication of horses and Middle Bronze Age dress ornaments, to the study of the large, Late Bronze Age fortified settlements. These topics cover the key issues of current European Bronze Age research, including the archaeological application of DNA analyses, and the theoretical approaches of political economies, therefore the outcomes presented here will hopefully be of wide international interest. Some of the research was carried out within the framework of the Lendület/Momentum Mobility Research Group launched in 2015, supported by the Hungarian Academy of Sciences at the Institute of Archaeology, Research Centre for the Humanities.

The paper by Ágnes Kustár and her colleagues presents the facial reconstruction of an Early Bronze Age female burial. The work serves as the first facial reconstruction study where DNA data was also considered regarding the pigmentation (eye and hair colour, skin tone) of a Bronze Age individual from present-day Hungary.

The two studies put forward by Eszter Melis and Gabriella Kulcsár as main authors, both discuss the results of micro-regional settlement investigations aimed to explore Early and Middle Bronze Age settlement structures using non-destructive methods. The settlement investigations conducted by Eszter Melis and her team focussed on the region of Nagycenk, nearby Lake Neusiedl. The data published here represents a significant piece of archaeological research as information from the region occupied by the Gáta–Wieselburg culture has been lacking in the past three decades. Furthermore, the site of Nagycenk-Kövesmező is one of the few Gáta–Wieselburg settlements investigated by a modern archaeological excavation.

Gabriella Kulcsár and her team discuss the Middle Bronze Age pit burial of a mature adult female with evidence for multiple physical trauma, from Central Hungary. The study touches upon the interpretation of pit burials in the context of the settlements of Bronze Age communities who otherwise practiced inhumation and cremation as their nominal mortuary tradition.

Géza Szabó's paper examines the so-called Tolnanémedi-type hoard horizon comprised primarily of dress ornament assemblages across to the Middle Bronze Age along with a newly discovered hoard from Mucsi in Tolna county. The publication includes the reconstruction of a costume worn by high status female members of the Transdanubian Encrusted Pottery culture and provides an interpretation of the symbolism of such ornaments.

The study by Gábor Ilon provides an overview of Bronze Age moulds and their distribution in the Carpathian Basin. The paper considers the assemblage as important evidence for local metallurgy, and sheds new light on the organisation and specialisation of bronze production.

Róbert Bozi and Géza Szabó explore the question of horse domestication within the context of Bronze Age cultures in Central and Eastern Hungary, based on the evidence of horse gear made of antler appearing first during the 2nd millennium in the Carpathian Basin. The study relies on newly discovered horse remains and their associated absolute dates.

The paper by Vajk Szeverényi and his colleagues discusses the results of their most recent excavation programme conducted at Csanádpalota; a prime example of a so-called 'mega fort' or large-scale fortified settlement typical in the Late Bronze Age in Southeast Europe. Anna Priskin in her study gives a detailed insight into the production and use of grinding stones recovered at the site.

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VAJK SZEVERÉNYI – PÉTER CZUKOR – ANNA PRISKIN – CSABA SZALONTAI

CSANÁDPALOTA-FÖLDVÁR
A LATE BRONZE AGE 'MEGA-FORT' IN SOUTHEASTERN HUNGARY

In memoriam Alexandru Szentmiklosi (1971–2019)

Zusammenfassung: In diesem Beitrag werden die spätbronzezeitliche Siedlung von Csanádpalota-Földvár und die Ergebnisse der ersten Grabungskampagne an diesem Ort vorgestellt. Während der Rettungsgrabungen von 2011 bis 2013 wurde eine befestigte Siedlung von enormer Größe mit mehreren Wallanlagen und Gräben freigelegt. Auf die ersten Rettungsgrabungen folgten nichtinvasive zerstörungsfreie Untersuchungen, kleinere gezielte Freilegungen und die Erforschung des regionalen Kontexts der Stätte.

Keywords: fortified settlements, Late Bronze Age, Carpathian Basin

Csanádpalota-Földvár is a recently discovered Late Bronze Age 'mega-fort' in Csongrád-Csanád County, Southeastern Hungary. The settlement is located 20 km east of the modern city of Makó, and practically occupies the area between the towns of Csanádpalota and Nagylak, both on the Hungarian–Romanian border *(fig. 1)*. The size of the enclosed area is estimated to be ca. 460 hectares; this makes it the largest known prehistoric fortified settlement in Hungary.

The Late Bronze Age fortified settlement of Csanádpalota has been the subject of our research since 2011, although some archaeological work had been conducted at the site earlier as well. The aim of this article is to present briefly the results of the surveys and excavations carried out during the past decade and to place Csanádpalota into a wider regional context of the emergence of a 'fortified landscape' and 'mega-forts' in the southern Great Pannonian Plain around the 14th century BC.[1]

The site is located on the Hungarian–Romanian border, just north of the Maros River, at the junction of three modern counties (Csongrád-Csanád and Békés in Hungary and Arad in Romania). In the east, it is bordered by the Krakk Creek, which joins the Csanádpalota Creek here. The surface of the site is dominated by the current and ancient, dry riverbeds of these two creeks. At the southern end of the site, near Nagylak, a large, swampy area can be found, which used to be a probably seasonally flooded area called Balatonya before the river regulations *(fig. 2)*.

The immediate environment of the site belongs to the drainage of the Maros (Mureş) River. From the end of the Pliocene, the Maros built a large, 80-100 km wide alluvial fan. During the Quaternary, the Maros, located in the axis of the fan, changed its riverbed in accordance with the then current slope. During most of the Quaternary, it flew towards the north, the Körös Region; however, towards the end of the period, during the Late Pleistocene and Early Holocene, its bed shifted from the north towards the southern Tisza valley, as evidenced by

[1] *Harding 2017* 12–13.

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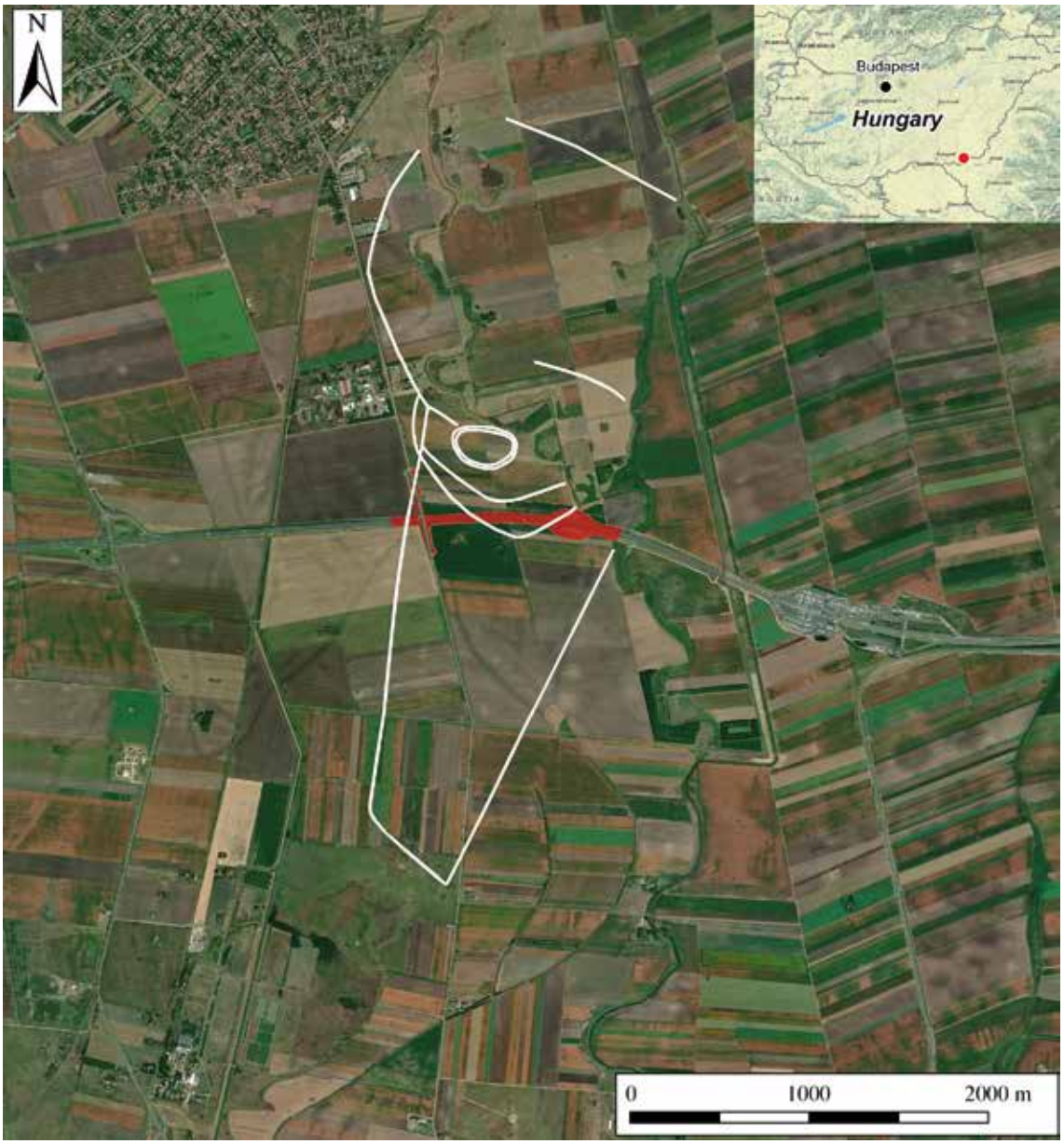


Fig. 1. The location of Csanádpalota-Földvár and the ditches, identified on Google Earth images

many hydrogeographical remains, such as the remnants of former main branches, e.g. the Száraz-ér ('Dry Creek').[2] According to a recent project trying to date these Late Pleistocene/Holocene riverbeds, the Maros flew just a little south of its current channel during the Bronze Age.[3]

In terms of geography, it is at the junction of three landscape microregions. According to the traditional nomenclature,[4] it is in the south-easternmost corner of the Csongrád Plain (part of the Körös–Maros interfluve region), which is a low alluvial plain with 81 to 101 m asl stretching east of the Tisza River. The perfect plain is disturbed only by the ancient channels of the Száraz-ér – an important waterway before the river regulations of the 19th century – in the east and

[2] *Andó 1993; Mike 1991* 680–692.
[3] *Sümeghy et al. 2013.*
[4] *Pécsi – Somogyi 1967; Marosi – Somogyi 1990.*

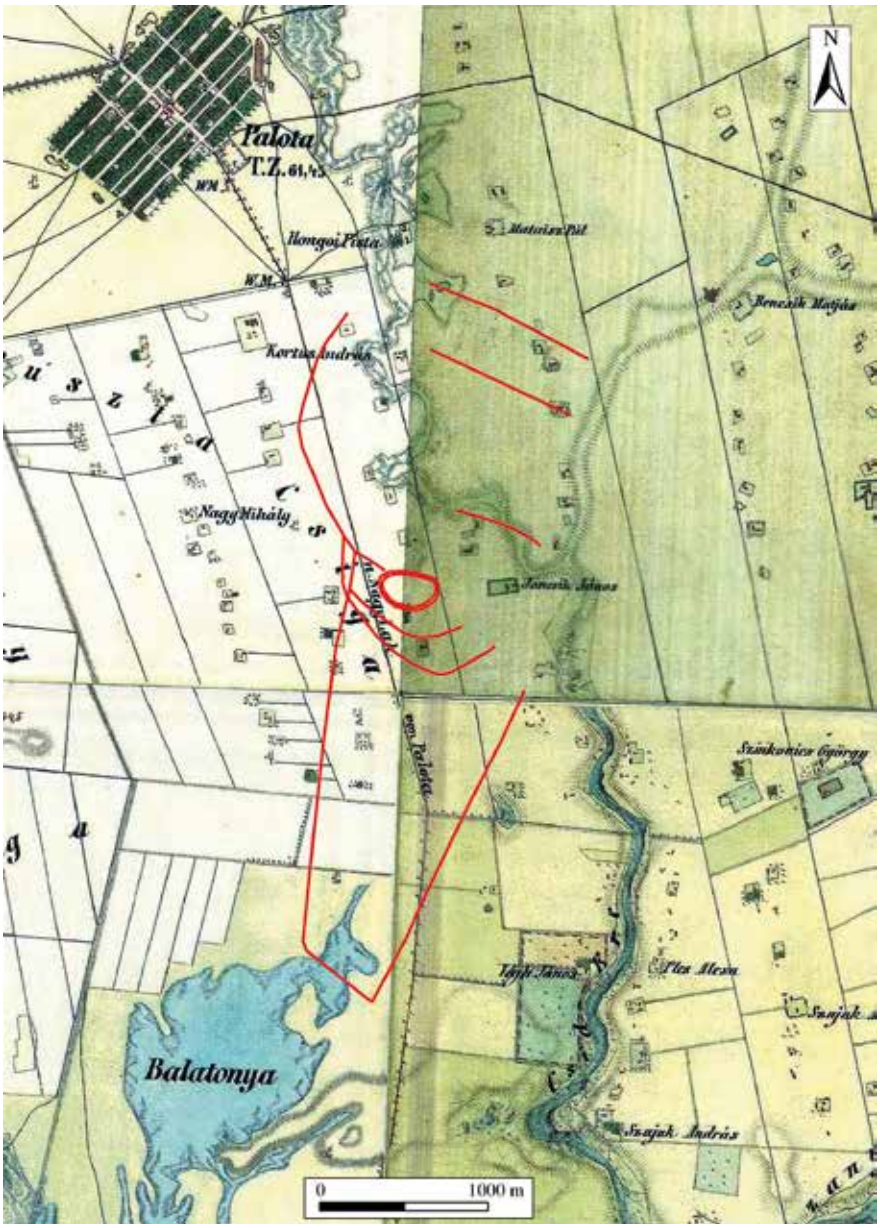


Fig. 2. Csanádpalota-Földvár on the Second Habsburg Military Survey Map (©Péter Czukor)

southeast. Immediately to the east stretches the Csanád ridge (also part of the Körös–Maros interfluve region), a loess covered alluvial fan with a height of 97 to 104 m asl. It is characterized by a rich formation of ancient meridional riverbeds and oxbow channels, and its main river is also the Száraz-ér. To the south lies the Maros Angle (part of the Lower Tisza Valley region), a low floodplain between 78 and 88.4 m asl. Its surface is broken up only by the ancient, filled-up channels, oxbows and backwaters of the Tisza and Maros rivers, with loess covered, slightly elevated, unflooded ‘islands’ between them.[5]

[5] A recent reconsideration of the borders of geographical microregions in Hungary based on complex landscape ecological aspects places the area of the site in the Lower Maros floodplain microregion: *Deák 2010; Deák 2017.*

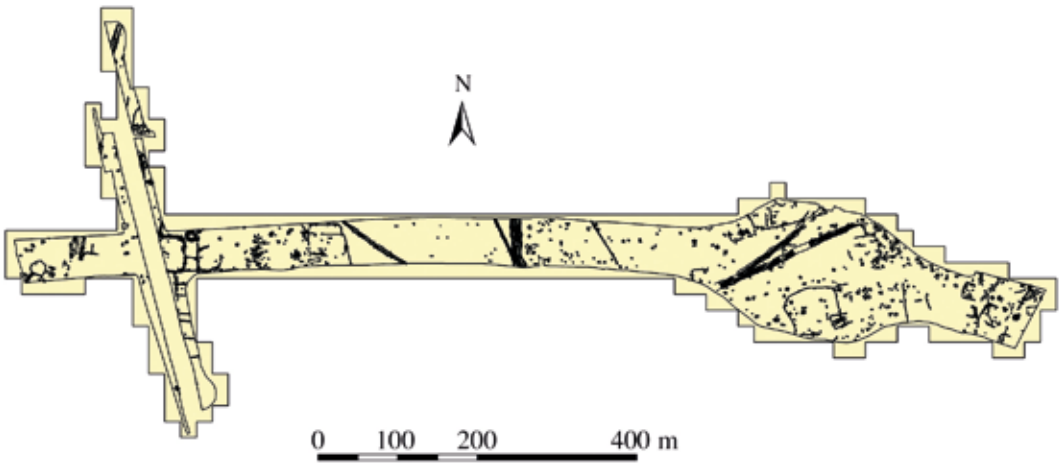


Fig. 3. Area of preventive excavations at Csanádpalota between 2011 and 2013 (©Péter Czukor)

History of research at the site

The site was first registered by Imre Szatmári in 1984 during surveys for an MA thesis, as a site with 'Early Iron Age' (Ha A–B and Ha C–D), Sarmatian, Avar and Árpádian-period materials.[6]

The site was first identified as a Bronze Age fortified settlement in 2005 by one of the current authors (Csaba Szalontai), when he and his colleagues from the Móra Ferenc Museum in Szeged carried out archaeological surveys in order to identify archaeological sites affected by the planned track of the M43 highway built between Szeged and the Hungarian–Romanian border (although at that time it was dated to the Middle Bronze Age).[7] He identified the oval central enclosure of the fortified settlement north of the track of the highway, and named the site 'Juhász T. tanya' after the abandoned farmstead just south of the track of the highway. At this time, he collected all the archival aerial photos and manuscript maps of the area, and had a 3D terrain model made.[8]

Intensive research at the site started in 2011, with the launch of the preventive excavations preceding the construction of the second section of the M43 highway between Makó and the Hungarian–Romanian border. Between 2011 and 2013, large-scale excavations were carried out in a 12-hectare-large area along the track of the highway, immediately south of the central oval enclosure *(fig. 3)*, with the participation of three of the current authors (Vajk Szeverényi, Anna Priskin and Péter Czukor). Already in 2011, we unearthed a large ditch in the western end of the area to be excavated. By following the line of the ditch on aerial photos *(fig. 4. 1)* and Google Earth images, we identified a series of enclosures surrounding a ca. 460-hectare-large area *(fig. 4. 2)*.[9] We excavated ca. 1000 archaeological features, of which 96 belonged to the Late Bronze Age settlement. We also unearthed settlements from the Sarmatian, Avar and Árpádian periods,[10] and two separate Avar-period cemeteries.[11] Special attention was paid to traces of the subsistence

[6] *Szatmári 1984* 16–18.
[7] *Szalontai 2006; Szalontai 2017.*
[8] *Szalontai 2012.*
[9] *Priskin et al. 2013; Czukor et al. 2013.*
[10] E.g. *Szabó 2013.*
[11] *Szeverényi – Priskin – Czukor 2014.*

1

2

Fig. 4. 1. The continuation of the ditch outside the excavated area, identified on an aerial photo (©Pazirik Kft.); 2. Enclosures 1–4b at Csanádpalota-Földvár on a Google Earth satellite image

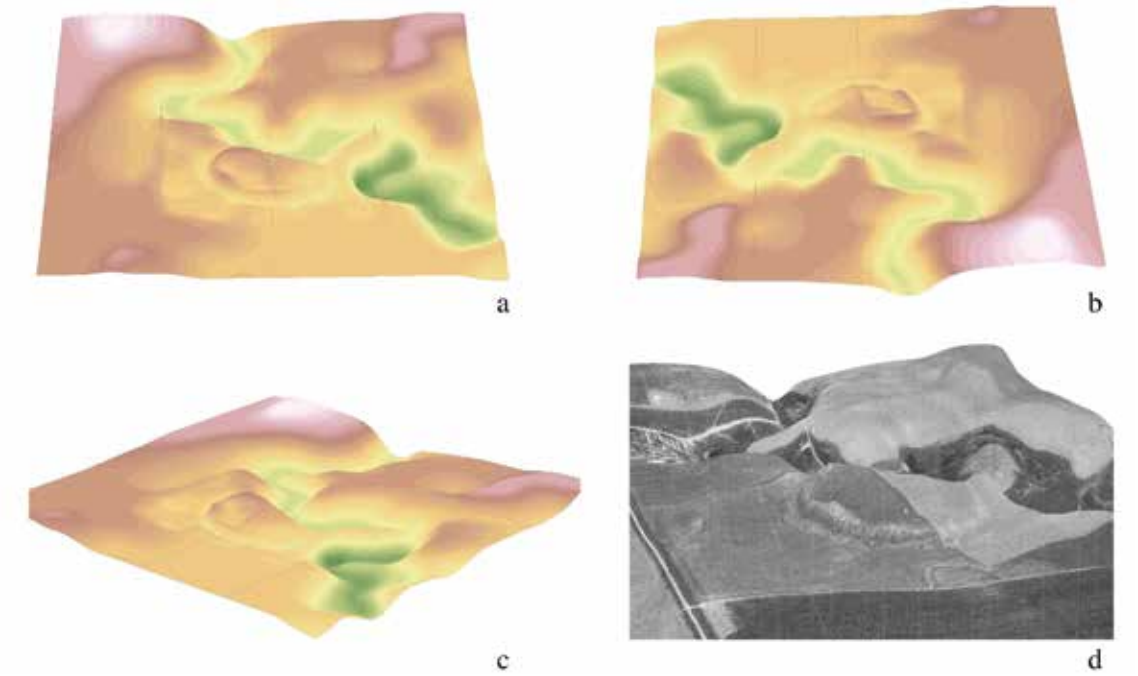


Fig. 5. a–c. 3D terrain model of Enclosure 1; d. An aerial photo wrapped on the digital elevation model (©András Kamarási, ©Antall Redencki)

economy and food production at the site, and the preliminary results of these investigations have already been published.[12]

Parallel to the excavation campaigns, we initiated the pedestrian survey of the whole site as well. Between 2012 and 2015, we surveyed the area of the central oval enclosure. By 2016, we surveyed about two thirds of the 460-hectare-large enclosed area.

In 2013, we carried out pedological coring and geophysical prospection in a small section of the central enclosure to determine where the ditch and rampart should be cut through. Both the coring and the geophysical survey were repeated on a larger scale in 2013 and 2015 to provide a complete picture of the central area of the settlement. In 2013, we cut through the rampart and ditch of the central enclosure to determine its date and structure.[13] In 2021, we started a smaller excavation in the central area of Enclosure 1 based on the data of the geophysical survey.[14]

Structure of the site

Csanádpalota-Földvár is a complex, multivallate enclosed settlement, parts of which can be identified on aerial photos and satellite images *(fig. 1)*. Although some of the elements of the enclosure are clearly visible and easy to interpret, others are not so straightforward. As a result, new images and data already force us to revise our previous interpretations with regard to the structure of the site,[15] and this reinterpretation will most certainly continue in the future as well. Many of the elements of this system of enclosures (mostly ditches, in some cases associated with a rampart) have not yet been excavated and will certainly need further fieldwork to be

[12] *Szeverényi et al. 2015a; Szeverényi et al. 2015b.*
[13] *Priskin et al. 2013; Szalontai et al. 2017.*
[14] *Szeverényi et al. 2021.*
[15] *Szeverényi – Priskin – Czukor 2014* 44; *Czukor et al. 2017* 220–222.

Enclosure	Length (m)	Enclosed area (ha)
1	970	7
2	2180	24
3	2895	43
4	10500	460

Table 1. Data on the enclosures of Csanádpalota-Földvár

verified. Here we provide only a simple description of these enclosures, and those that have already been investigated with other means as well will receive a slightly more detailed treatment in the subsequent sections. This analysis is based on Google Earth images, a high-definition video taken from a drone in 2013, and the above-mentioned geomagnetic survey from 2015.

An oval enclosure comprising a double ditch and a rampart forms the centre of the site (Enclosure 1) *(fig. 4. 2)*. According to the first 3D terrain model *(fig. 5)*, it is possible that in the northeast it was connected to the Csanádpalota Creek, and it has been suggested that it might have been a moat.[16] This, however, will need further investigation (e.g. coring in the ditch, reconstruction of Bronze Age water levels, etc.). The area enclosed by the double ditch is ca. 7 hectares *(Table 1)*. To the south, it is surrounded by two semi-circular ditches (Enclosures 2 and 3), both of which seem to join the Csanádpalota Creek in the east *(fig. 4. 2)*. The southern one seems either to end in the Csanádpalota Creek in the northwest as well, or to run into the northern part of the external enclosure (Enclosure 4a), while the other seems to join a longer, linear ditch in the west (the southern part of the external enclosure: Enclosure 4b). A short, slightly arching, E–W oriented ditch north of the Csanádpalota Creek might also be part of Enclosure 3, making it a slightly irregular, pen-annular, oval enclosure *(fig. 4. 2)*.

The most external enclosing ditch, Enclosure 4 has so far been considered a roughly linear feature running between the southern city-limits of Csanádpalota in the north and the Hungarian–Romanian border in the south.[17] Based on our 2015 geophysical survey and a re-examination of the Google Earth images, however, it seems that this is actually two enclosures: one starts from the northwestern corner of Enclosure 1 and runs first to the northwest, and then turns in an arch to north and northeast (Enclosure 4a) *(fig. 1, fig. 2)*. Here it reaches again the creek and the surrounding swampy area in the southeastern city-limits of Csanádpalota, where the line is impossible to follow on the satellite images. There are, however, two parallel lines running WNW–ESE in the north between the two creeks, which might be the northern part of Enclosure 4a; they might have been the northern border of the site. This, however, is still very much uncertain and will need verification on the ground.

The other, southern part of this most external ditch, Enclosure 4b, is a linear ditch running roughly from the north to the south and then back *(fig. 1, fig. 2)*. It starts from Enclosure 4a, from the vicinity of its starting point. Then it runs SSW for 2.3 km, where it turns in an angle first to SE and then back to NNE. It runs in that direction for ca 2.3 km again to join the Krakk Creek.

[16] *Szalontai 2012* 284.
[17] *Szeverényi – Priskin – Czukor 2014* 44; *Czukor et al. 2017* 220–222.

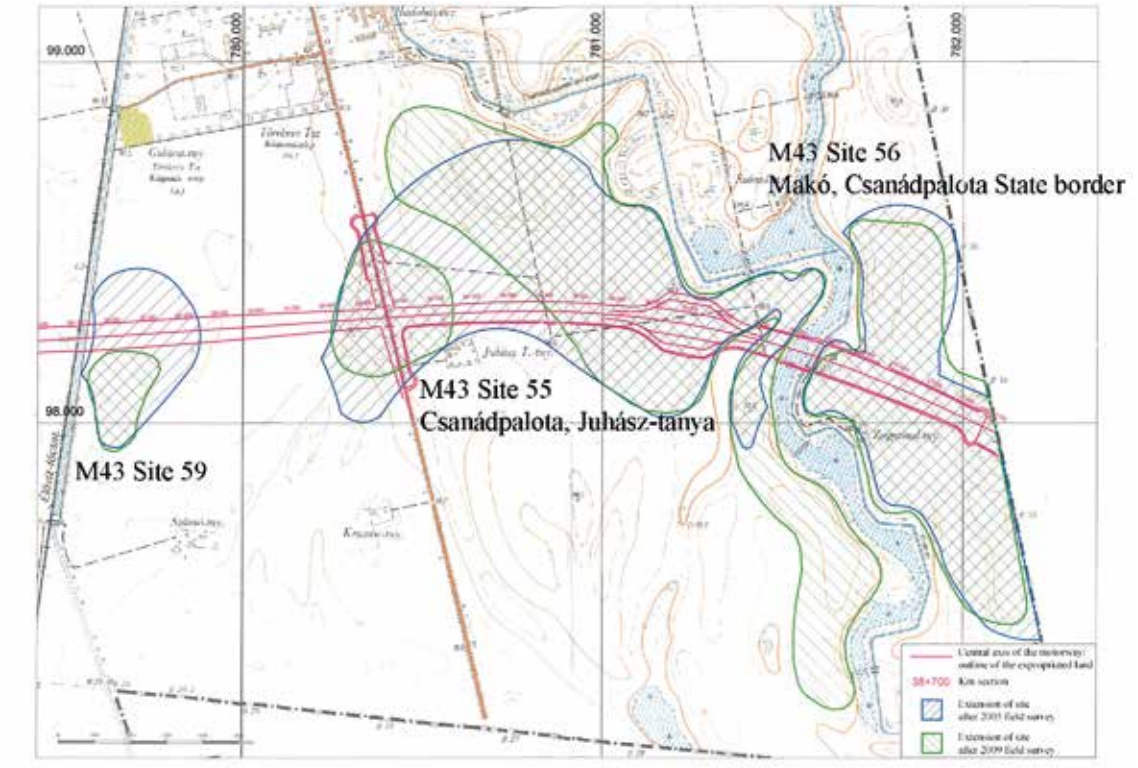


Fig. 6. Map of Csanádpalota-Juhász T. tanya after the first two surveys (2005, 2009)
(©Csaba Szalontai, ©Csanád Fekete)

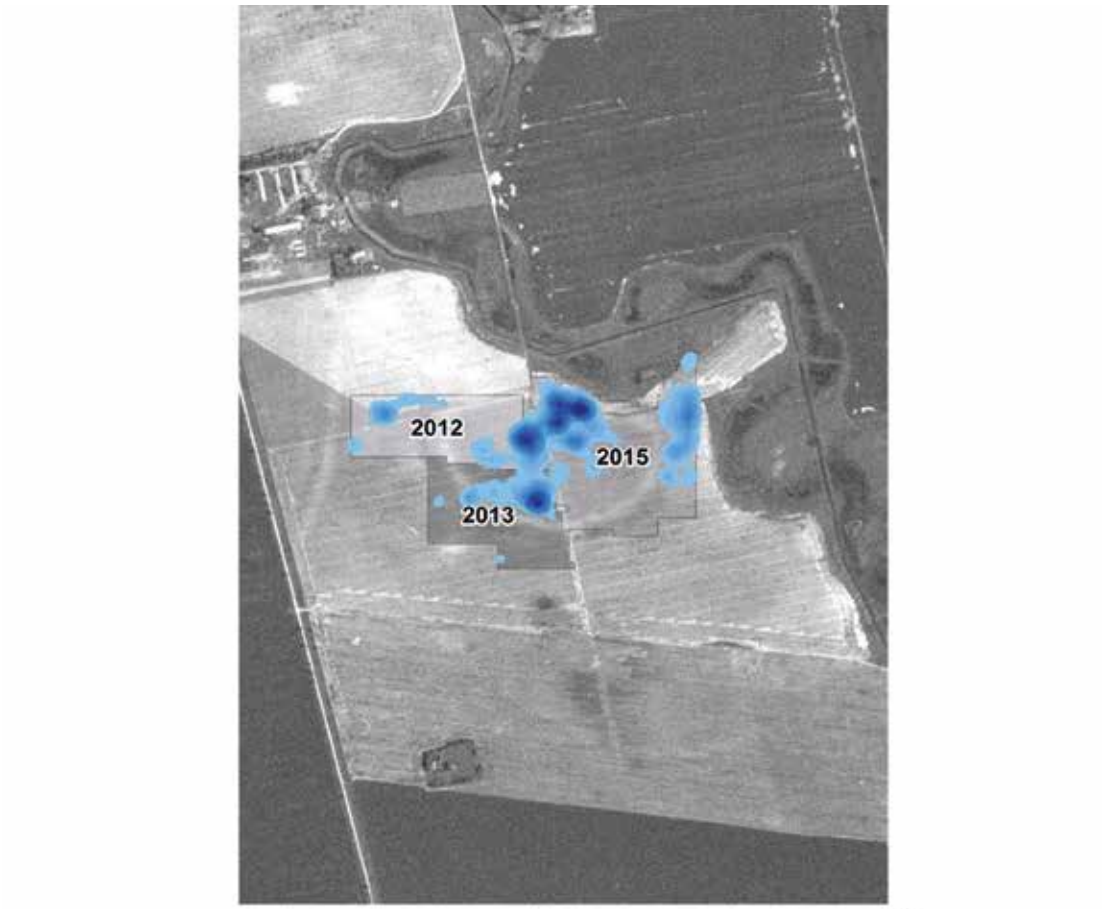
Archaeological field surveys

Three kinds of pedestrian archaeological surveys have been conducted at the site so far: simple surveys that recorded the existence of the site, and two kinds of systematic survey – intensive and extensive.

After the initial identification of the site in 1984, pedestrian archaeological surveys at the site started again in 2005, preceding the planning of the M43 motorway, when Csaba Szalontai first identified the fortification. A large, horseshoe-shaped area was registered named Csanádpalota-Juhász T. tanya, with occupations identified from the Bronze Age and the Sarmatian and Árpádian periods.[18] The survey was repeated in 2009; it confirmed the existence and occupational periods of the site, although its extension was considered to be slightly smaller *(fig. 6)*.

In 2012, 2013 and 2015 we carried out a systematic survey in the area of Enclosure 1 in 10×10 m grids. We could collect a relatively small amount of strongly fragmented Late Bronze Age pottery, small amounts of Medieval pottery, and daub. The distribution of Late Bronze Age pottery *(fig. 7. 1)* shows more intensive activities within the enclosure, with significant concentrations in the south and the north along the N–S axis of the oval enclosure, and smaller concentrations just outside the ditch in the northeast and the northwest. The distribution of daub *(fig. 7. 2)* practically coincides with the line of the enclosure, with significant concentrations in the southern, eastern and northwestern sections. These results indicate that the structure of the rampart most probably included a significant amount of packed clay, which was burnt at some point.

[18] *Szalontai 2006; Szalontai 2012.*



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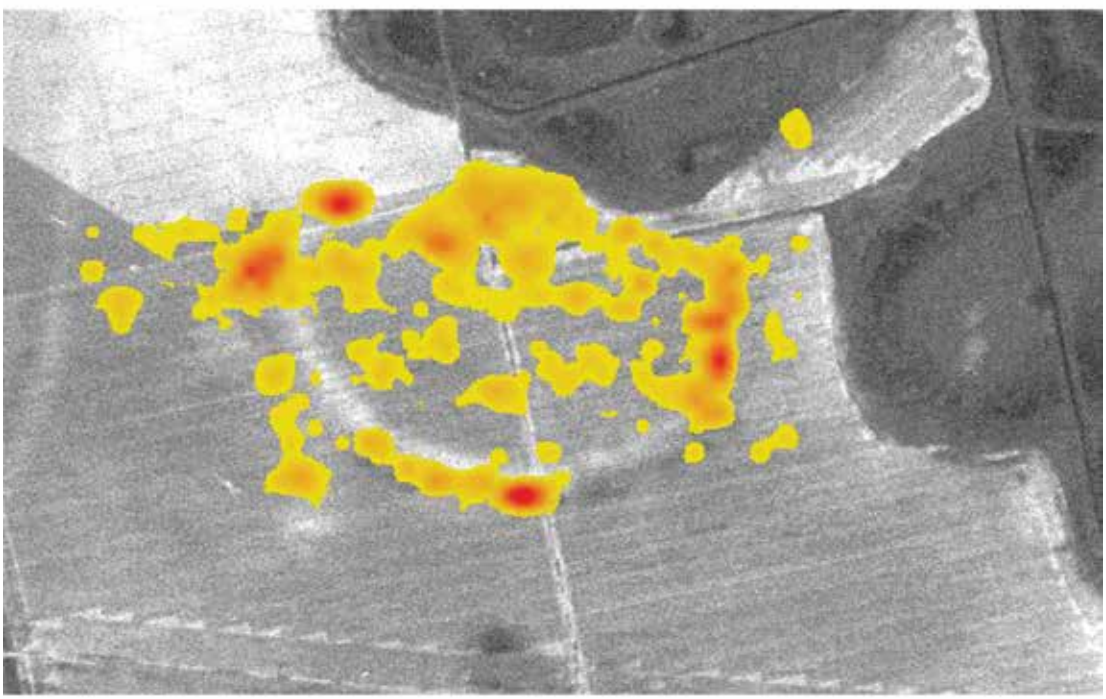

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Fig. 7. 1. Distribution of Late Bronze Age pottery within Enclosure 1 of Csanádpalota-Földvár (©Péter Czukor); 2. Distribution of daub within Enclosure 1 of Csanádpalota-Földvár (©Péter Czukor)

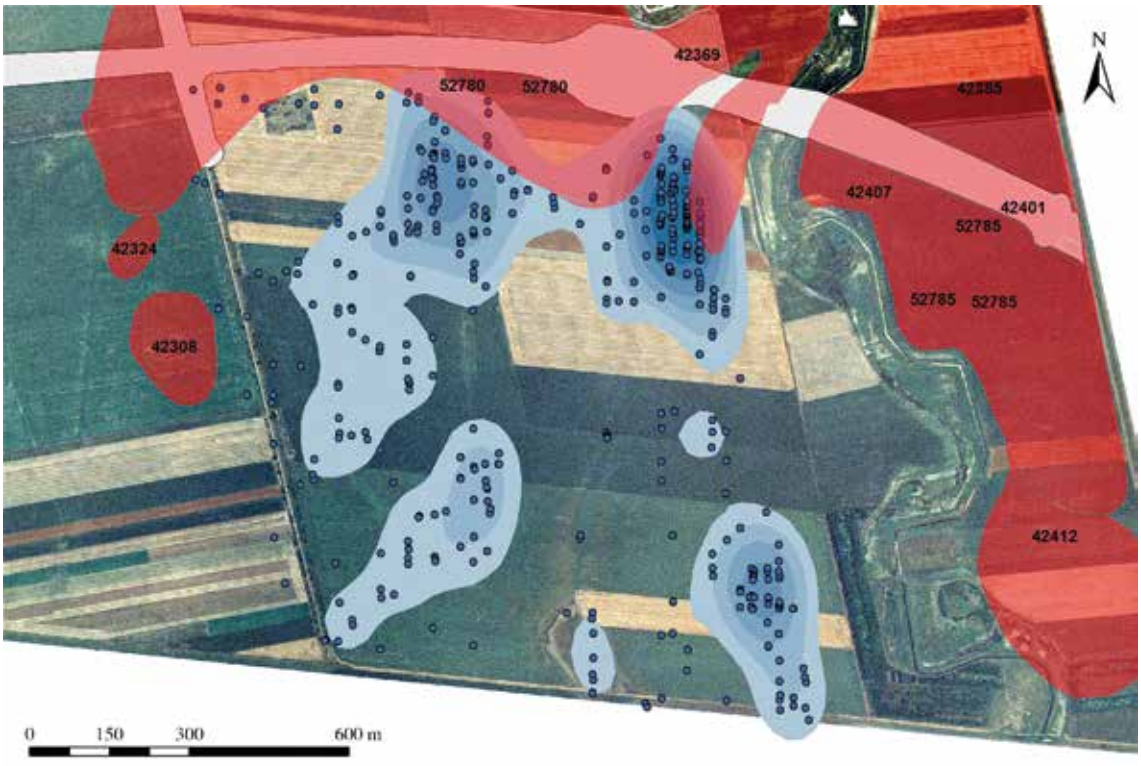

Fig. 8. Results of systematic transect survey at Csanádpalota-Földvár (©Péter Czukor)

In April and May 2016, we carried out a systematic extensive survey in ca. half of the area of the 460-hectare-large site, primarily in its southern and western part (ca. 228 hectares). We surveyed the area in transects 25 m apart from each other. The results show four, previously unidentified concentrations of Late Bronze Age finds south of Enclosure 3, but within Enclosure 4b *(fig. 8)*. These probably indicate intensive activity areas within the Bronze Age enclosures.

Geomagnetic prospection

Geomagnetic prospection was carried out in 2013 and 2015 at the site, in both cases within the area of Enclosure 1. The first measurement was on a very small scale (ca. 800 m^2), preceding the excavation of Enclosure 1 in 2013. Its aim was to verify the exact location of the rampart and the ditch before excavation. It was this survey that first clearly indicated that we are dealing with a double ditch in Enclosure 1.

The second survey was carried out on a much larger scale. It covers ca. 18 hectares, practically the whole area within Enclosure 1 and its immediate surroundings *(fig. 9)*. The oval double ditch of the enclosure is clearly visible in the image. The external oval anomaly seems to be a simple ditch based on the image, which was confirmed later by excavation as well. Within the internal ditch, a line possibly indicating a burnt rampart with timber structure is discernible in the northwest, south and east. In the northeast, it remains unclear if the ditches join the Csanádpalota Creek, since the curve of the enclosure indicates that the ditches do not actually make a full circle. Unfortunately, this area was impossible to survey as it is already part of the muddy bank of the modern canal of the creek.

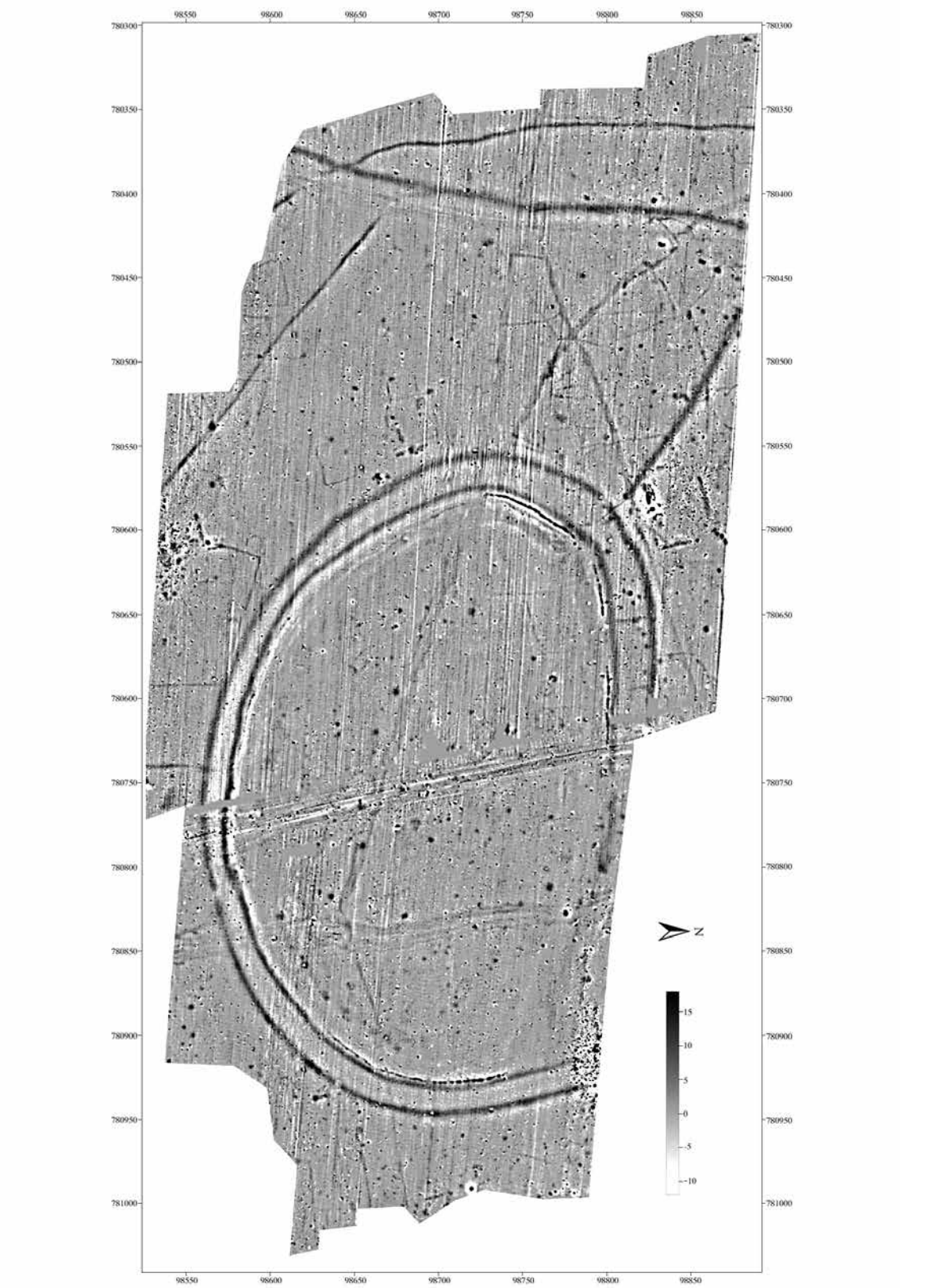

Fig. 9. Geophysical survey of the central area of Csanádpalota-Földvár
(©Gábor Márkus, Archeodata 1998 Bt.)

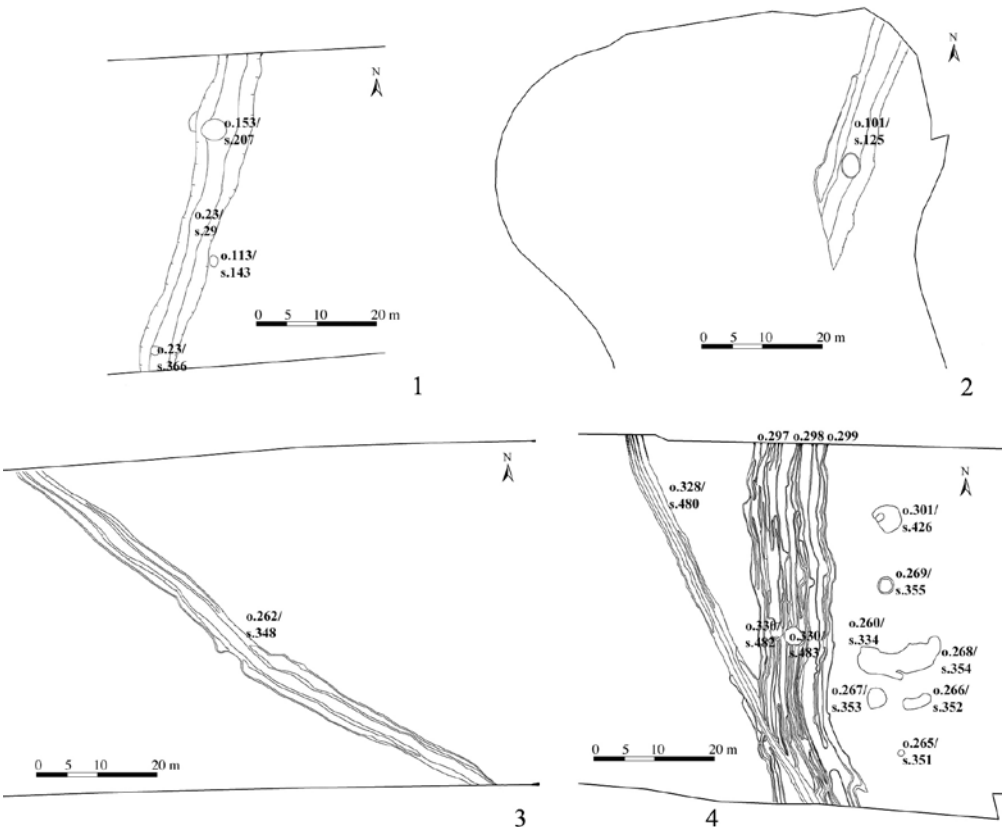

Fig. 10. Enclosure ditches of Csanádpalota-Földvár. 1. Ditch 23; 2. Ditch 101; 3. Ditch 262; 4. Ditches 328 and 297–299 (©Péter Czukor)

The parallel lines crossing Enclosure 1 in the centre in a roughly N–S direction are the anomalies caused by the current dirt road. However, to the east, a series of not entirely straight, but parallel lines running in a N–S direction are indeed Late Bronze Age ditches. These are shallow and narrow, parallel features whose continuation was actually unearthed during the large-scale preventive excavations *(fig. 10. 4).*

The geomagnetic survey indicates a large number of features within Enclosure 1, but their date and nature remain unclear until further excavation. The pedestrian surveys indicate mostly Late Bronze Age occupation, but other periods (mostly the Árpádian period) are also represented. Anomalies that would clearly indicate houses are not visible, although the arrangement of some anomalies might suggest timber-framed houses. Obviously, this needs to be verified through further excavations.

Most of the rectangular anomalies visible south and west of Enclosure 1 must belong to the Medieval village, whose remains were also excavated to the south, during the preventive excavations.

Excavation results in the external area

Excavation at the site started in 2011 and took two different forms. Between 2011 and 2013, an almost 12-hectare-large area was explored in the form of large-scale preventive excavations preceding the construction of the M43 highways between Szeged and the Hungarian–Romanian border (and going on to Arad, Romania). These excavations were organized and carried out by the Móra Ferenc Museum, Szeged.

1

2

Fig. 11. 1. Vessel deposited at the bottom of Ditch 23 at Csanádpalota-Földvár (©Vajk Szeverényi); 2. Antler deposited at the bottom of Ditch 23 at Csanádpalota-Földvár (©Vajk Szeverényi)

The excavated area is located south of Enclosures 1 and 2. It was a ca. 60 m wide strap running in an east-west direction, cutting through Enclosures 3 and 4b. 119 080 m^2 was assigned for excavation, of which 104 907 m^2 was actually accessible. About 1000 archaeological features were excavated from multiple periods. The earliest finds belonged to the Late Bronze Age. These features were scattered throughout the excavated area with the exception of its easternmost end. A significant concentration of Late Bronze Age features was observed in the central part of the excavated area. The other periods at the site were represented by a Sarmatian settlement, an Avar settlement, two separate Avar-period cemeteries, and an Árpádian-period settlement.

Altogether 96 features belong to the Late Bronze Age: 64 pits, 29 ditches, and three find concentrations. No house remains or traces of other buildings were found. Several deep pits may have functioned as wells, although we could not identify any built structures in them.

The 29 excavated ditches can be assigned to two groups based on their sizes. The ditches in the first group belonged to the above described system of enclosures; they had U- or V-shaped cross-sections, and were 2-3 m deep and 4-7 m deep. Features 23 and 101 were part of Enclosures 4b, the southern part of the most external ditch, while Features 262 and 440 were part of Enclosure 3 *(fig. 1)*.

Feature 23 was located in the western end of the excavated area. It was a 6-7 m wide, 1.5-2 m deep, straight ditch running in a roughly N–S direction *(fig. 10. 1)*. Its fill contained numerous Late Bronze Age finds, fragmented and intact ceramic vessels *(fig. 11. 1)*, antler *(fig. 11. 2)* and bronze objects. Further, smaller features were identified at the bottom of the ditch. Feature 153 stands out among these. It was a large, beehive-shaped pit, whose outline appeared ca. 1 m deep within the fill of the ditch. Due to the high water table, its bottom could not be fully excavated, but it definitely reached deeper than the bottom of the ditch. These features indicate that the ditch had a long and complex history: after its construction and use, during the process of filling up another pit was dug into its fill. These features also yielded characteristic Late Bronze Age pottery, which shows that these events played out during a single archaeological period, but most probably in a number of consecutive phases.

The other group of ditches is represented by narrow and shallow features, which do not fit into the system of enclosures described above (e.g. Features 197–199, 326) *(fig. 10. 4)*. They have a different direction, and often cut each other or the larger ditches. These observations indicate that they might have a different function or chronological position. Based on the preliminary study of their finds, they also yielded Late Bronze Age ceramic material of the same pottery style, thus the extent and explanation of the chronological differences can be established only after a more detailed analysis.

Ca. 400 m of the external ditches of the Csanádpalota enclosures were excavated. No traces of a built rampart or its burnt remains could be observed. It is possible that only a simple earthen rampart was built from the soil removed from the ditches during their construction, which have long since eroded.

Only one other phenomenon connected to the structure of the enclosures could be observed. Two sections of Enclosure 3 were excavated, where it crossed the track of the highway. In the eastern excavated section, we found a gate *(fig. 12)*. At this point, there is a 5-meter-long break in the semi-oval enclosure. On both sides, the depth of the ditch decreases suddenly, in a step-like fashion. At the end of the ditch sections six larger postholes (four in the NE, two in the SW), ca. 50 cm in diameter, indicated the existence of a wooden structure (a gate?), which provided access to the internal area in a NW–SE direction. In the vicinity of the gate two large pits with rich material were excavated (Features 439 and 474), and the ditch terminals near the gate also yielded larger amounts of Late Bronze Age finds.

Altogether 64 Late Bronze Age pits were unearthed at the site. These had a rather varied shape and depth: most were oval, some completely irregular and amorphous. The character of their fill and the material they contained were also rather varied: some had a homogeneous fill with hardly any finds; others had a complex, layered fill with large amounts of archaeological materials. We would like to highlight a few of the latter category, since their interpretation might be important with regard to the establishment of the role and function of the whole settlement. Many of the pits with complex fills (e.g. Features 44/51, 407/685, or 474/834) contained special finds: large amounts of fine pottery, bronze objects, stone implements, or complete antlers. We attempted to use much finer methods during their excavation, based on which the mode and sequence of the deposition of the finds can be reconstructed.

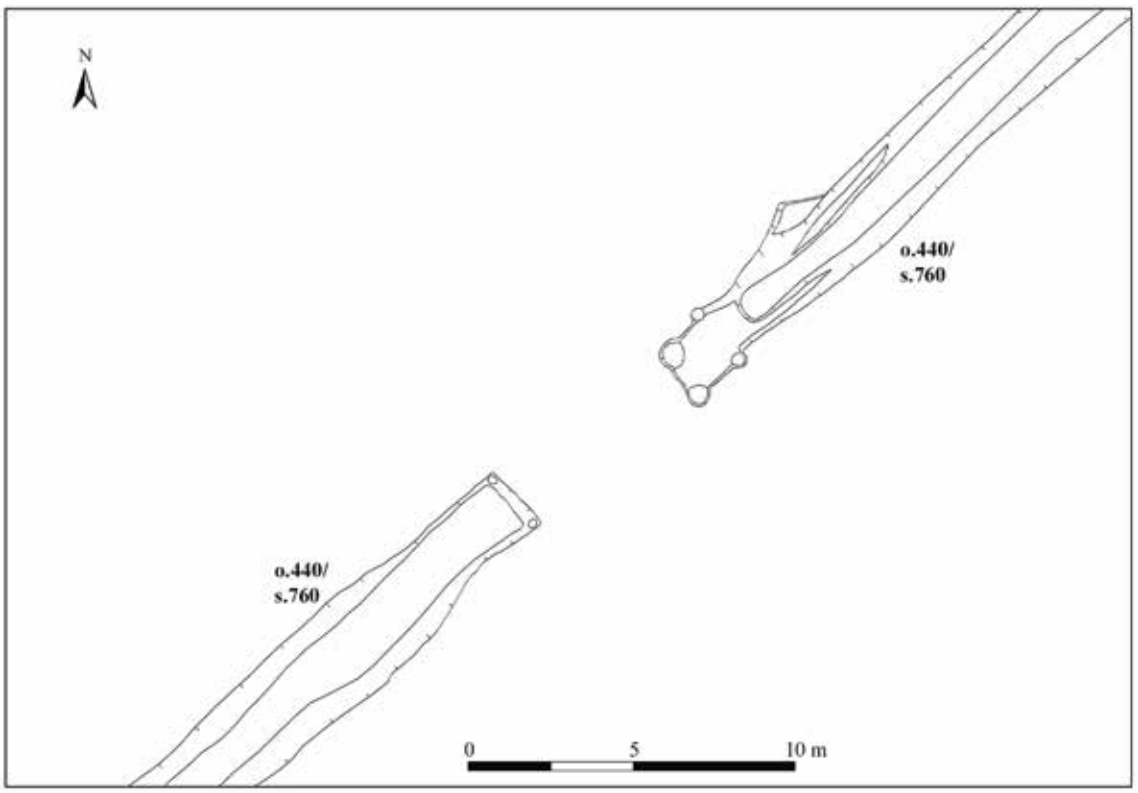

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Fig. 12. 1. Gate in Ditch 440 at Csanádpalota-Földvár (©Péter Czukor); 2. Posthole of the gate in Ditch 440 at Csanádpalota-Földvár (©Péter Czukor)

Fig. 13. Pit 44 at Csanádpalota-Földvár (©Péter Czukor)

Fig. 14. Pit 407 at Csanádpalota-Földvár (©Péter Czukor)

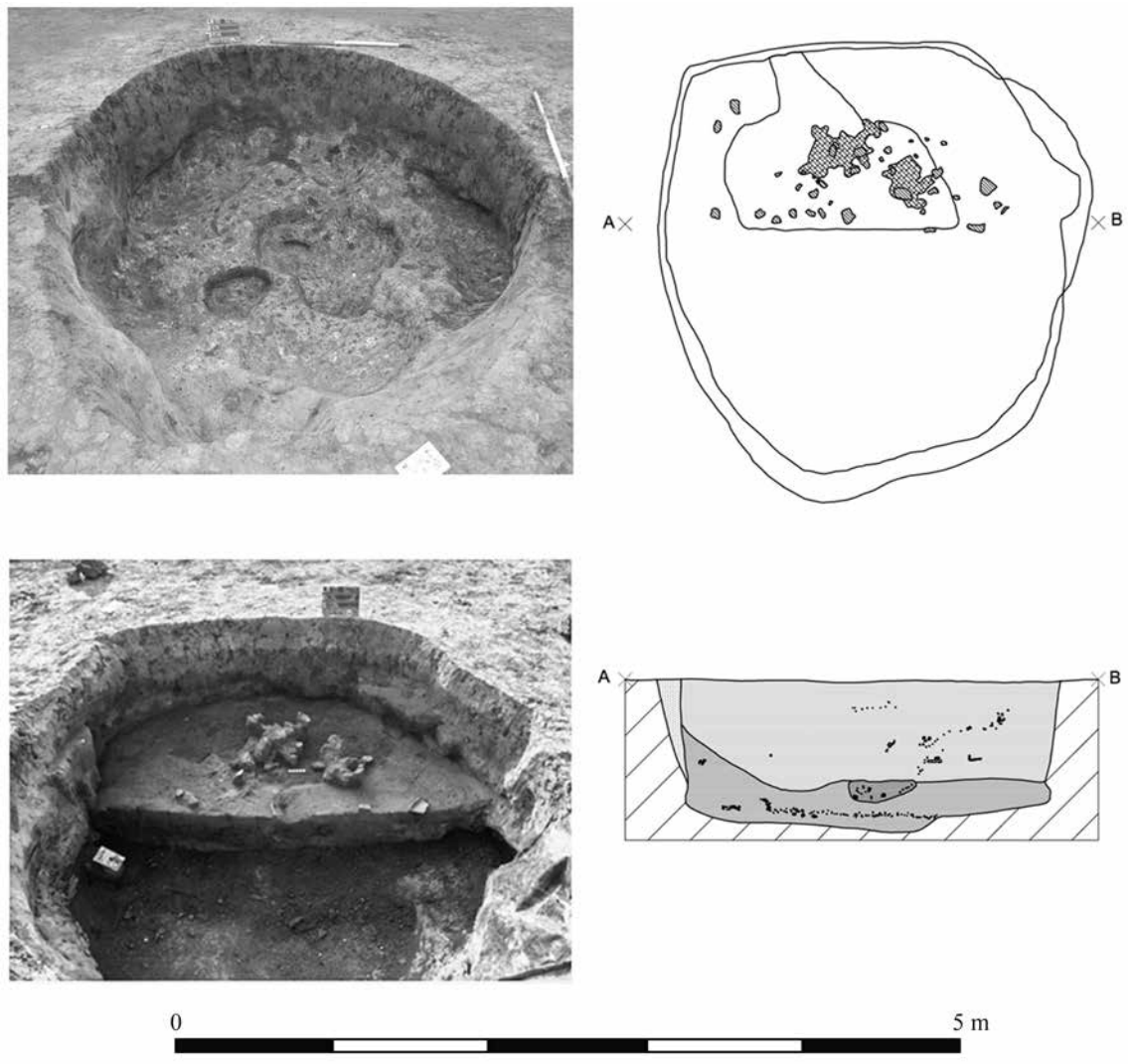

Fig. 15. Pit 474 at Csanádpalota-Földvár (©Péter Czukor)

Pit 44 had a complex sequence of layers in its fill *(fig. 13)*. In the uppermost layer the sherds of a large, collapsed, richly decorated vessel with vertical channelling and large knobs was discovered, mixed with fragments of smaller cups. In the layer below, in the southern part of the pit, we found arched pieces of burnt daub and we observed a blackish burnt fill under the large urn-like vessel. The bottom of the pit yielded further large, thick pieces of burnt daub. The context and the charred fill indicate some kind of a burning episode, possibly of ritual character.

Feature 407, a pit 4 m in diameter and 0.65 m in depth, also seems to be special. Its walls were sloping and 3-4 scoops had been dug into its bottom. The dark brown fill of the pit complex contained characteristic channelled Late Bronze Age pottery and a bronze knife. Along its northwestern, step-like side a debris of burnt daub was observed, in which a bowl was discovered. In front of the debris, an animal skull and other animal bones had been placed at the bottom of the pit *(fig. 18)*. The pit yielded altogether 164 pieces of pottery sherds.

Feature 474 was a round pit ca. 3 m in diameter and 1.5 m in depth. It also yielded a significant amount of material in clearly identifiable layers *(fig. 15)*. More than 400 pieces of pottery sherds were unearthed, which belonged to at least 34 vessels, mostly fine ware. A large amount of cattle, sheep and goat bones were also found, together with a complete skeleton of a young sheep, although not

placed in anatomical order, and the remains of a pig, a dog and hare from another layer. According to the calculations based on the minimum number of individuals, altogether 600 kg meat belonged to the bones found in the pit.[19] The pit also seemed special from the point of view of botanical remains: the sample taken from its fill contained 745 charred grains of common or bread wheat.[20]

Excavation results in the central area

Smaller scale excavations in the central area were carried out in 2013. Based on the results of the systematic survey, coring and the first geophysical prospection of the central Enclosure 1, we were able to identify more precisely the location of the enclosure.

We opened a 3×40 m trench running north–south, perpendicular to the rampart. The remains of the rampart appeared in the central part of the trench, but due to agricultural cultivation had only survived to about the height of 50 cm. Its internal structure, presumably made of packed clay, was only indicated by a 30-40 cm wide stripe of burnt daub *(fig. 16. 1)*. On the inside of the rampart, parallel to it, a row of postholes was discovered, which might have been part of a palisade wall *(fig. 16. 2)*. Two nearly 3 m deep ditches with V shaped cross-sections ran through the central and southern parts of the trench *(fig. 17)*. The ditches – similarly to the ditch segments discovered earlier along the motorway track during the preventive excavation – contained a large amount of characteristic Late Bronze Age ceramics.

Late Bronze Age finds

We are only in the first phase of the analysis of the Late Bronze Age material from the site, thus here we can give only a preliminary overview of some of the more important finds. The large majority, ca. 5200 pieces of the ceramic material comes from the pits, while the ditches yielded ca. 1200 finds. The ratio is slightly different with metal objects: 21 from the ditches and 31 from the pits or other features.

The pottery found at Csanádpalota can be safely dated to the Reinecke B D–Ha A1 phase based on its parallels. However, the stylistic analysis and 'cultural affiliation' of Late Bronze Age channelled pottery from the southern part of the Great Pannonian Plain has been notoriously difficult and controversial (not to mention our general disbelief regarding traditional concepts of 'archaeological cultures'). Terms such as 'Csorva', 'Proto-Gáva', 'Pre-Gáva', 'Gáva I' and 'Cruceni–Belegiš II' have often been used simultaneously, and sometimes interchangeably, for such materials, and researchers do not always agree upon the differences and overlaps between these terms.[21] The clarification of this terminological controversy is beyond the scope of this preliminary report, and for the sake of simplicity the term 'Pre-Gáva' – preferred, or at least used, by many Hungarian scholars – will be employed here to describe this material, with the caveat that it has very strong connections with the pottery found to the south, labelled Cruceni–Belegiš II.

[19] *Szeverényi et al. 2015b* 101.

[20] *Szeverényi et al. 2015b* 106.

[21] E.g. *Trogmayer 1963; Trogmayer 1992; Gumă 1993; Gumă 1997; V. Szabó 1996; V. Szabó 2017; Przybyła 2005; Szentmiklosi 2009; Bader 2012; Sava 2020; Sava – Ursuţiu 2021.* See also V. Szeverényi – A. Priskin – P. Czukor: The Late Bronze Age pottery from Csanádpalota. Csorva – Proto/Pre-Gáva – Cruceni–Belegiš? Paper presented at the international conference "Local Tradition, Culture, Contact or Migration? The pottery Belegiš-Gáva Type as a Chronological and Cultural Marker in Southeast Europe During the Late Bronze Age." Timişoara, 8th–11th October 2018.

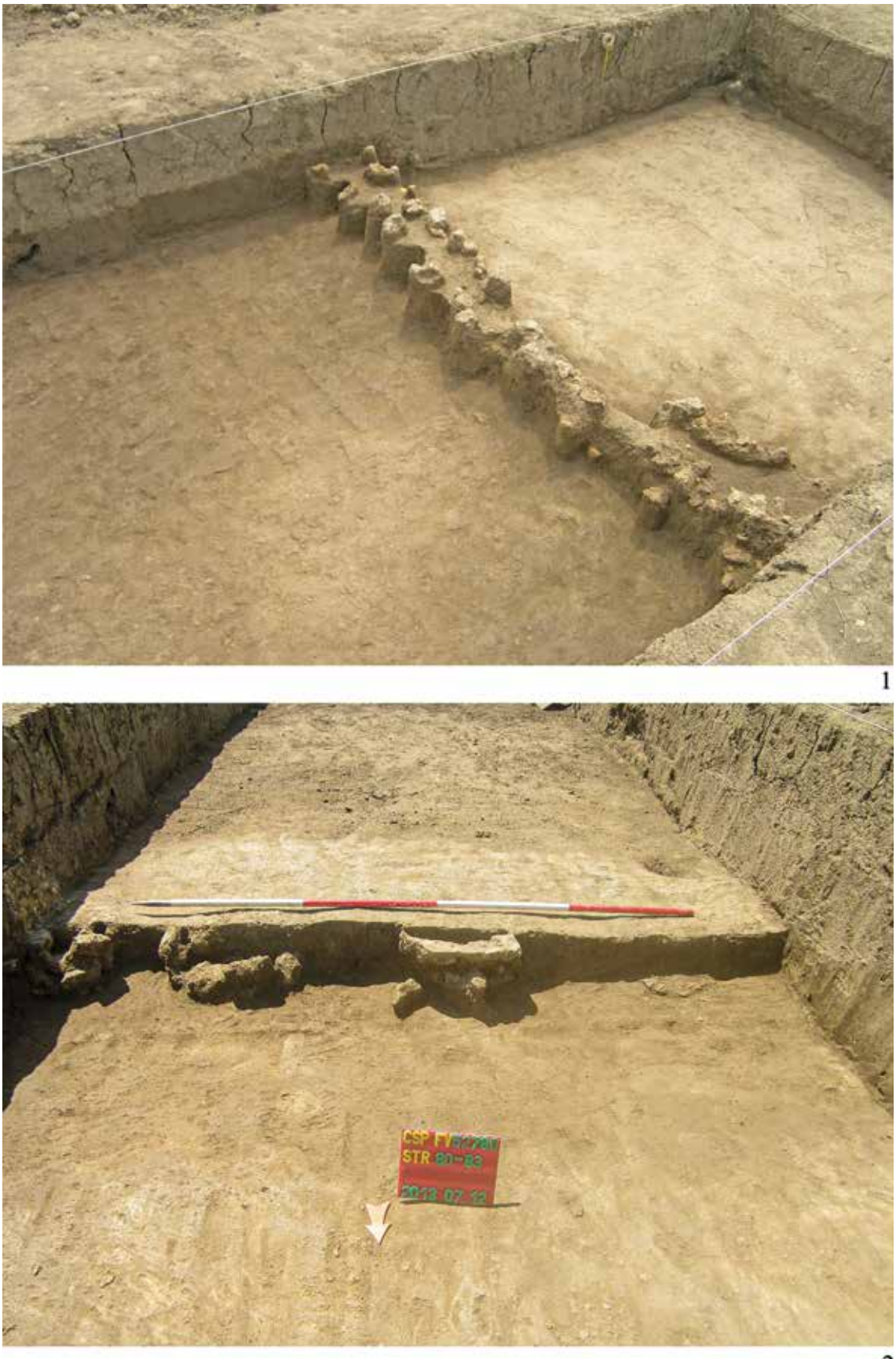

Fig. 16. 1. Burnt daub indicating the packed clay rampart of Enclosure 1 (©Péter Czukor);
2. Postholes of the palisade of Enclosure 1 (©Vajk Szeverényi)

Fig. 17. Ditch of Enclosure 1 (©Vajk Szeverényi)

Within the ceramic material, it is easy to discern a group of coarsely manufactured domestic ware, usually fired to red or orange and tempered with larger pieces of grog. Shapes include mostly larger bowls and storage vessels, often decorated with finger impressions or finger-impressed cordons. In some cases the vessel surface is smoothed, in others it is rusticated or untreated. In contrast, finer ware consists of vessels with thinner wall, and often medium or highly polished surface. Sometimes the use of graphite[22] can also be observed on their surface, Pit 474 even contained a piece of graphite.

One of the most distinctive vessel types of the period is the so-called 'Pseudo-Protovillanova' type urn, an unhandled, often richly decorated amphora-type vessel with conical neck, often flaring rim, and a low, biconical belly. Various regional and chronological variants are known from the Carpathian Basin.[23] Fragments from such vessels were found in a number of features, e.g. a conical neck with everted rim and horizontal channelling on the neck from Ditch 101/125 or a vessel with vertically channelled belly and conical neck from Pit 44/52.

Fragments of bowls with inverted, horizontally facetted or diagonally channelled rim are quite frequent from the Late Bronze Age features. The shape was widespread since the final phase of the Middle Bronze Age, and continued to be used in the Late Bronze Age as well. Facetted and channelled rims, however, are characteristic for the beginning of the Urnfield period in Transdanubia (Western Hungary)[24] and the Pre-Gáva period in the Great Pannonian Plain.[25]

[22] *Kreiter et al. 2014.*

[23] For classifications, see *Forenbaher 1988* and most recently *Váczi 2017.*

[24] E.g. *Patek 1968* 102, Taf. 6. 28–29, 31.

[25] E.g. *Trogmayer 1963* Taf. 11. 8, Taf. 14. 8, etc.; *B. Hellebrandt 1990* fig. 3. 2, 4–5, fig. 5; *V. Szabó 1996* fig. 26. 8, 10, etc.

Various variants of bowls with channelled shoulder and funnel-shaped neck are also attested. They have parallels from a large number of Late Bronze Age sites from both the southern Plain (e.g. Csorva, Igrici, Szentes, Tiszapüspöki, Şuşani [Romania], etc.)[26] and the western Carpathian Basin (e.g. Balatonmagyaród, Očkov [Slovakia], Čaka [Slovakia], Vál, etc.).[27] A variant of this form are bowls with carinated shoulder.

Carinated cups with high handles with numerous variants are also among the most frequent finds. Ditch 23 yielded the fragment of such a fine, well-fired, thin-walled cup *(fig. 18. 2)*. Its high handle is attached to the slightly everted rim. Groups of short, vertical incisions decorate its shoulder. This cup also represents common type of the RB D–Ha A1 phase; its parallels are known e.g. from the vessel depositions of Battonya,[28] Igrici[29] or Tiszapüspöki.[30]

Another almost intact cup was found in the same ditch. Originally, it had three knobs on its belly (two are now broken off), arranged symmetrically together with its handle. The latter had originally been pulled up above the rim, but only its stub remains. It is a carinated cup with a truncated cone shaped lower part, slightly arched neck and everted rim. There is an incised decoration on its shoulder, between the knobs, consisting of V-shaped line bundles and a double garland motif *(fig. 19. 3)*.

A similar, blackish cup was found in Feature 101 *(fig. 20. 1)*. Its handle is fragmentary. The belly is slightly bulging, its base is flat; the handle starts from the belly and rises above the rim. The belly is decorated with incised vertical and oblique line bundles and knobs. The shape of these cups is a common feature in the RB D–Ha A1 phase in the Plain, although the version decorated with knobs is rarer. It is known from a vessel deposition from Debrecen.[31] Decoration on similar cups has been attested from Debrecen[32] and Giroc-Mescal, Romania.[33]

Similar, but deeper cups are also attested, e.g. from Ditch 23, a large wall fragment of such a deep cup with a broken-off handle, and channelled wavy lines or garlands running around its shoulder *(fig. 18. 1)*. This is also a wide-spread vessel shape and decorative motif in the RB D–Ha A1 phase in the southern Great Plain, known e.g. from the mound of Şuşani (Romania)[34] or Timişoara-Fratelia (Romania).[35]

Two rim fragments are rather unusual. One was found in Feature 279. It was part of a vessel of unknown shape with arched neck and everted rim, with the lower and upper stub of the handle. Above the upper stub, a triangular 'snake-head' or 'bird-head' protome protrudes upward from the rim, decorated with circular motifs made up of burnished lines and line dots. A similar pattern can be seen on the neck and under the handle as well *(fig. 19. 1)*. A similar protome was found in Feature 101, more rhombic in shape and decorated with impressed dots and lines *(fig. 19. 2)*. Similarly shaped handles and decoration is known from Timişoara-Fratelia (Romania), from Cruceni–Belegiš II context.[36]

[26] E.g. *Trogmayer 1963* Taf. 11. 1; *B. Hellebrandt 1990* fig. 3. 1; *V. Szabó 1996* fig. 8. 4–5; *V. Szabó 2017* fig. 10; *Stratan – Vulpe 1977* Taf. 18. 143–145.
[27] *Horváth 1994* fig. 13. 1; *Paulík 1962* Abb. 17. 1; *Točík – Paulík 1960* fig 24. 6; *Petres 1960* Taf. 14. 5.
[28] *Sz. Kállay 1986* fig. 4. 3.
[29] *B. Hellebrandt 1991* fig. 7. 3.
[30] *V. Szabó 2004a* fig. 11. 46.
[31] *Poroszlai 1984* Pl. 1. 4–6.
[32] *Poroszlai 1984* Pl. 4. 1.
[33] *Szentmiklosi 2009* Pl. 67. 1–2, 4.
[34] *Stratan – Vulpe 1977* Taf. 6. 97, 99.
[35] *Gumă 1993* Pl. 16. 1.
[36] *Szentmiklosi 2009* Pl. 123. 3, Pl. 148. 9.

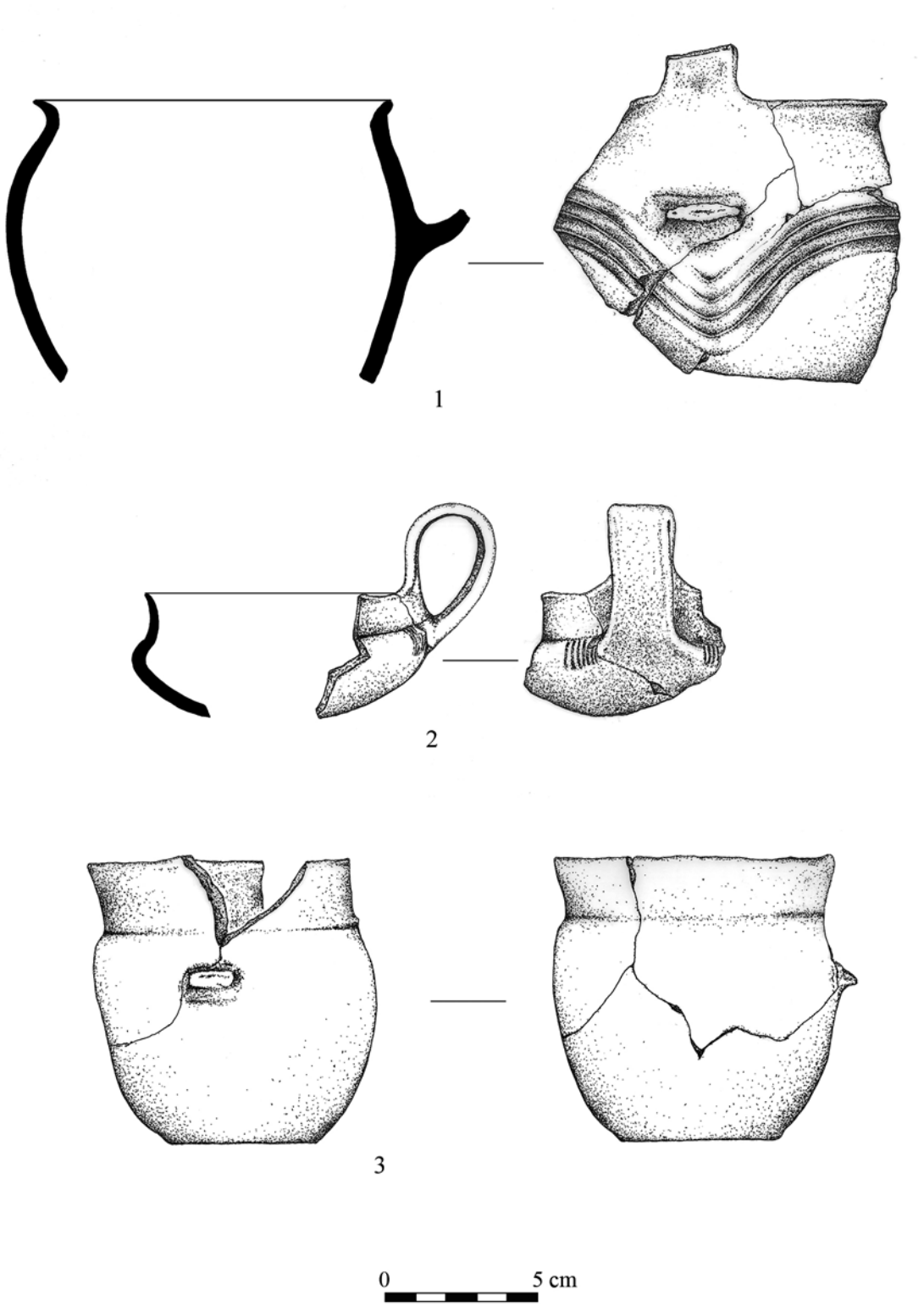

Fig. 18. Selected ceramic finds from Csanádpalota-Földvár (©Judit Zoé Nagy)

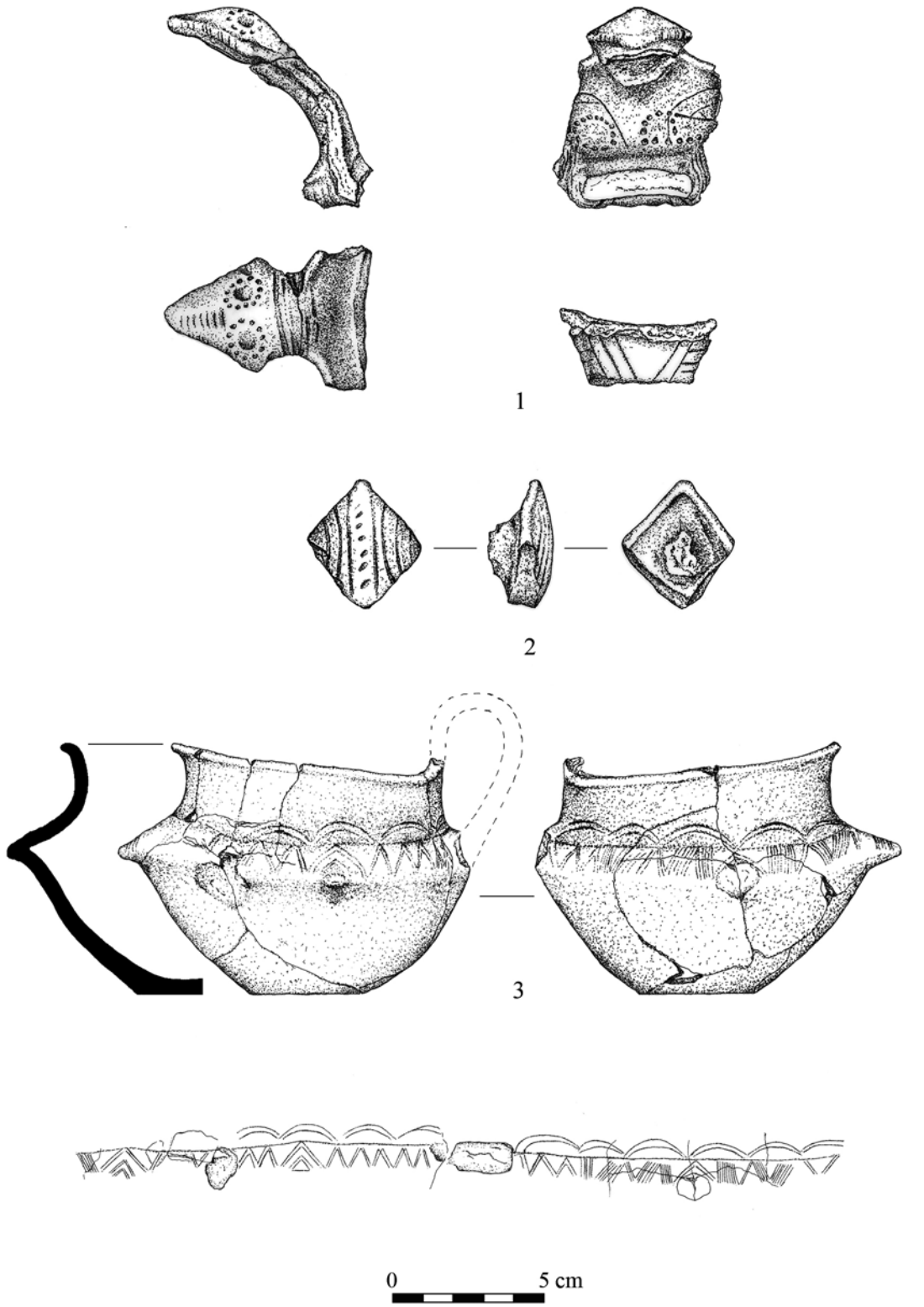

Fig. 19. Selected ceramic finds from Csanádpalota-Földvár (©Judit Zoé Nagy)

One-handled jars with oval body and funnel-shaped neck represent a widespread form both in the Plain[37] and in Transdanubia[38] in the RB D and Ha A1 phases. One such specimen with slightly bulging belly was found in Feature 23. Its broken handle had probably been pulled up above the rim *(fig. 18. 1)*.

Altogether 48 metal objects and four pieces of slag were excavated from Late Bronze Age features at the site. The intact objects include two bronze arrowheads, two bronze bracelets, a bronze socketed axe, a bronze flat axe, a bronze knife, three bronze pins and two spiral bronze wires. The majority of the metal objects are made up of small, unidentifiable bronze fragments.

Perhaps the most exquisite object from the site is a single-edged, straight-backed, tanged bronze knife from Pit 407. Its hilt consists of two bone plaques with incised line-bundle decoration, which were fastened to the tang by three bronze rivets *(fig. 20. 2)*.

Radiocarbon dates

Based on the ceramic material, the settlement can be dated to the RB D–Ha A1 period. A series of radiocarbon dates have been obtained to determine the place of the site on the absolute timescale as well. As indicated above, the use of the settlement and the construction of the various enclosures probably took place over a longer period of time, with a number of subphases. To some degree, these radiocarbon dates – combined with a more detailed analysis of the find material – will help identify and date these phases more precisely. At the moment, however, they only provide a general absolute chronological framework, and more measurements of carefully chosen samples from good contexts will be needed to achieve this goal.

According to our current knowledge of Late Bronze Age absolute chronology in Hungary, the period begins (and the Middle Bronze Age ends) around ca. 1450 cal BC (coterminous with the RB B–C1 transition).[39] There are very few available radiocarbon dates for the RB D–Ha A1 phase,[40] based on which this phase is placed to ca. 1350–1150 cal BC. Our dates confirm this picture and a series of similar dates have recently been published from fortified sites from Romania and Serbia as well.[41]

Altogether 10 samples have been measured so far from Csanádpalota-Földvár *(fig. 21; Table 2)*.[42] One of the samples, from Feature 153/207, was dated to the Avar period (ca. AD 540–610, 1σ range), all the other proved to be of Late Bronze Age date. The date from Feature 153 can be explained by its complex context: here two pits, a Late Bronze Age (Feature 153) and an Avar period pit (Feature 23/365) were dug into Ditch 23; furthermore, they also cut each other, which caused some mixing of their materials.

The Late Bronze Age dates range between ca. 1430 and 1120 cal BC. Samples from two ditches and five pits have been dated so far. Based on the assumed relative chronology of the

[37] *Sz. Kállay 1986* fig. 3. 6.

[38] E.g. *Patek 1968* Taf. 64. 1, Taf. 70 (centre); *Ilon 1996* Pl. 8. 3.

[39] E.g. *P. Fischl et al. 2013* 357–358; *O'Shea et al. 2019; Duffy et al. 2019;* see *Müller – Lohrke 2009* for Central European absolute dates.

[40] E.g. *Ilon 1996* 153–154; *Ilon 2014a* 32–39; *Ilon 2014b* 128–129; *Ilon 2015* 247–250; see also generally for Late Bronze Age radiocarbon dating *Harding 1980; Sperber 1987; Della Casa – Fischer 1997.* See also most recently *Quinn et al. 2020* for Middle and Late Bronze Age dates from Southwestern Transylvania.

[41] *Szentmiklosi et al. 2011; Harding 2017; Gogâltan et al 2019; Lehmphul et al. 2019; Sava – Gogâltan – Krause 2019; Molloy et al. 2020.*

[42] All radiocarbon measurements were carried out at the HEKAL AMS ^{14}C facility of the Institute for Nuclear Research, Debrecen *(Molnár et al. 2013a; Molnár et al. 2013b)*. The dates were calibrated with the OxCal (v4.4) software *(Bronk Ramsey 2009)* using the IntCal20 Northern Hemisphere radiocarbon calibration curve *(Reimer et al. 2020)*.

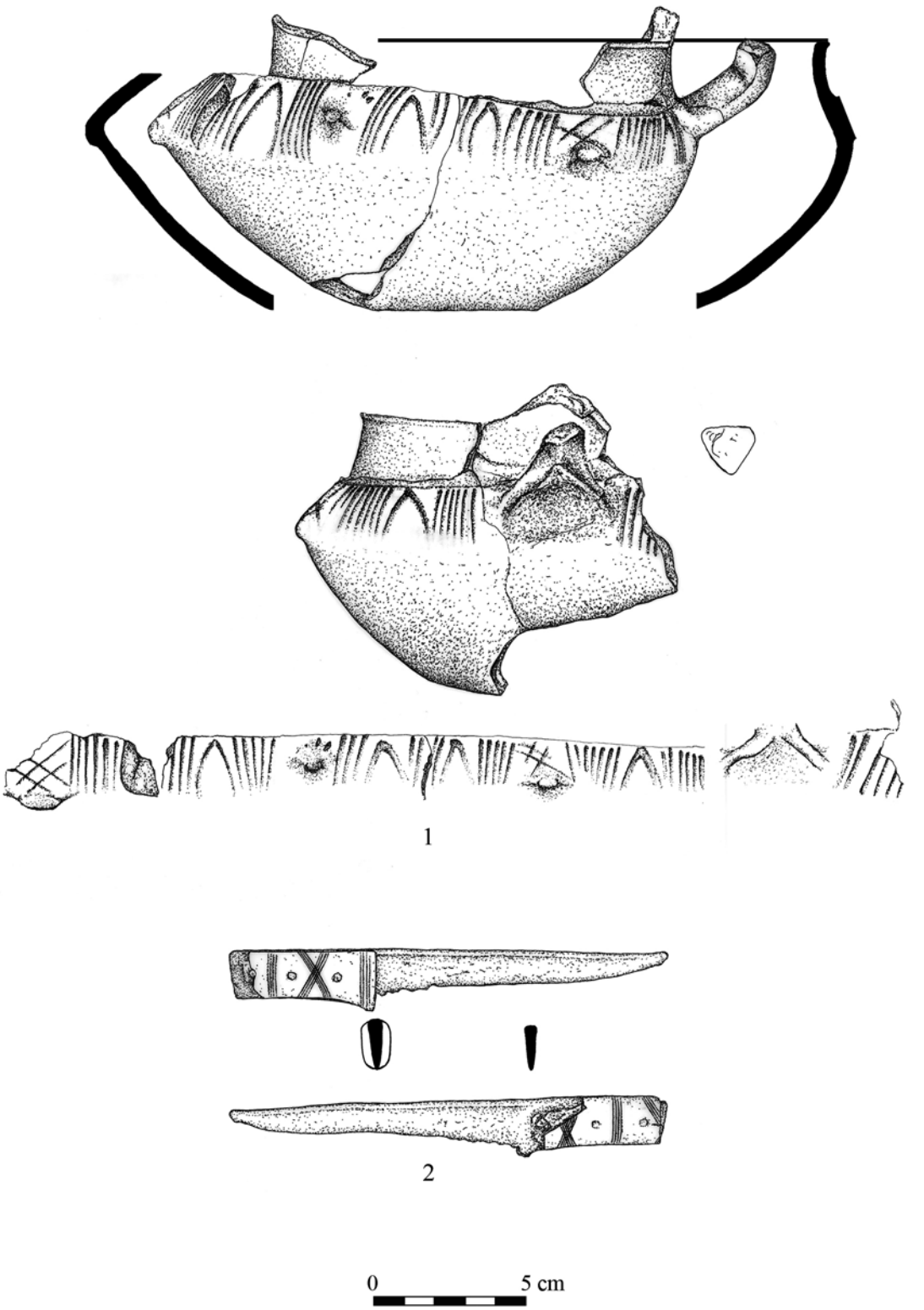

Fig. 20. Selected ceramic finds and bronze knife from Csanádpalota-Földvár (©Judit Zoé Nagy)

Feature ID	Feature type	Sample material	Lab code	Uncalibrated BP age	Calibrated 1σ range	Calibrated 2σ range	$\delta^{13}C$ (estimated)
201 (Enclosure 1)	ditch	animal bone	DeA-3470	2976±35	1260–1120 BC	1380–1050 BC	-25‰
153/207	pit	animal bone	DeA-3471	1498±33	AD 540–610	AD 430–650	-25‰
474/834	pit	charred grain	DeA-3483	3012±35	1380–1200 BC	1390–1120 BC	-25‰
474/834	pit	charred grain	DeA-3484	3025±36	1380–1210 BC	1400–1130 BC	-25‰
474/834	pit	charred grain	DeA-3485	3037±35	1380–1230 BC	1410–1130 BC	-25‰
23/468 (Enclosure 4b)	ditch	animal bone	DeA-8209	3074±25	1400–1290 BC	1420–1260 BC	-25‰
440/1245	pit	animal bone	DeA-8210	2964±24	1220–1120 BC	1270–1090 BC	-25‰
44/51	pit	animal bone	DeA-8211	3119±24	1430–1320 BC	1450–1300 BC	-25‰
439/1118	pit	charred grain	DeA-8296	3009±27	1290–1200 BC	1390–1120 BC	-25‰

Table 2. Calibrated radiocarbon dates from Csanádpalota-Földvár

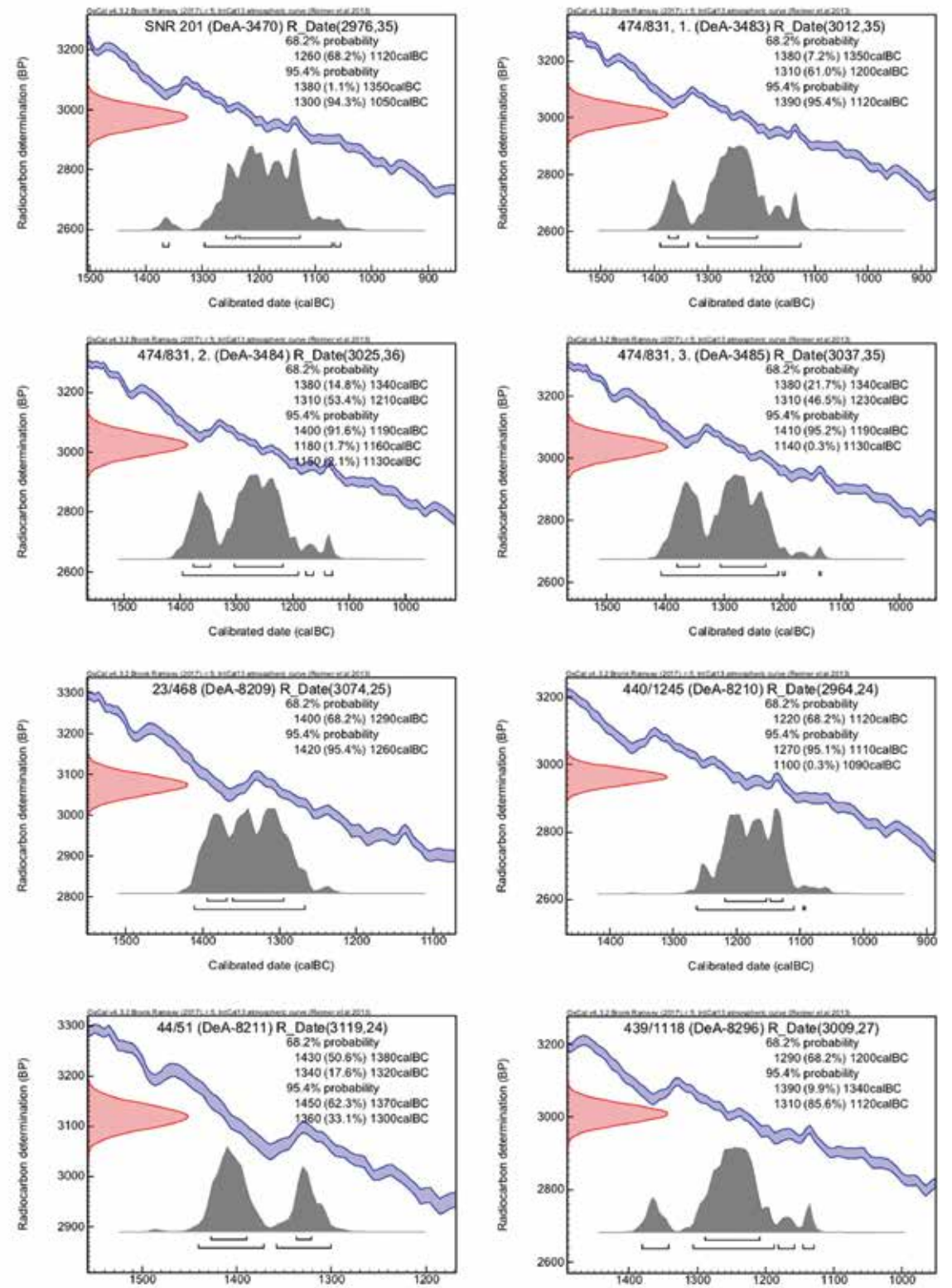

Fig. 21. Calibrated radiocarbon dates from Csanádpalota-Földvár

construction of the various ditches, one would expect the earliest dates from Enclosure 1 and the latest from Enclosures 4a and 4b. However, the earliest date (Feature 44/51: 1430–1320 cal BC, one sigma range) comes from the westernmost excavated Late Bronze Age feature, which lies already outside Enclosure 4b. The latest dates are known from two pits (Pit 439: 1290–1200 cal BC and Pit 440: 1220–1120 cal BC, one sigma range) and Enclosure 1 (ID 201: 1260–1120 cal BC, one sigma range).

At the present state of our research, we think it is impossible yet to determine the date of the construction of the enclosures or the date of the abandonment of the site. While the (2 sigma) probability ranges of the dates available so far cover the period between ca. 1450 cal BC and 1050 cal BC, this does not necessarily mean that these dates are the upper and lower borders of the period of (Bronze Age) occupation at the site. While some of the dates come from short-lived samples (seeds), most of them come from unarticulated bones of animals from various contexts. These thus only indicate that the given features were still in use ('open') at some time during the ranges given by the measurements, and do not provide more exact dates for their creation or filling up/abandonment, or even the sequence of their construction. For example, in the case of the dates from Ditch 23 (= Enclosure 4b) and 201 (= Enclosure 1), one sigma dates (ca. 1400–1290 cal BC and 1260–1120 cal BC respectively) would indicate the chronological priority of Enclosure 4b, which archaeologically seems unlikely. The two sigma ranges, however, overlap considerably (ca. 1420–1260 cal BC and 1380–1050 cal BC, respectively), and indicate only the time-span when the ditches were still in use, and material could have entered them (deposited at the bottom or just thrown in). Thus, theoretically they allow the construction of Enclosure 1 to be earlier than that of Enclosure 4b. To sum up, while these dates so far give us an indication of the time span of the Late Bronze Age occupation (ca. 1430–1120 cal BC), we will need much more dates from short-lived samples from well-chosen contexts, before we can use them to establish the dates of the beginning, the various construction phases and the abandonment of the settlement more precisely.

Summary and future work

The aim of the present article was to provide a brief description of the Late Bronze Age settlement of Csanádpalota-Földvár and the results of the first few field campaigns at the site. During the preventive excavations of 2011–2013, the site proved to be a multivallate 'mega-fort' of huge dimensions. The first rescue excavations were followed by a series of other investigations and small scale excavations, and research into the regional context of the site.

Already at the beginning of our work at Csanádpalota we became aware that its enclosures do not stand alone, but form part of a larger network of smaller and larger fortified settlements, even 'mega-forts', in the southern part of the Great Pannonian Plain, such as Orosháza-Nagytatársánc,[43] Sântana-Cetatea Veche (Romania),[44] Corneşti-Iarcuri (Romania),[45] and the recently identified Iđoš-Gradište (Serbia).[46]

Thanks to previous work both in Hungary and abroad, series of such sites have now been identified and investigated to various degrees and with various methods. A series of smaller

[43] *Banner 1939.*

[44] *Gogâltan – Sava 2010; Gogâltan – Sava – Mercea 2013; Gogâltan – Sava 2018; Sava – Gogâltan – Krause 2019; Gogâltan – Sava – Krause 2019.*

[45] *Heeb – Szentmiklosi – Wiecken 2008; Szentmiklosi et al. 2011; Heeb et al. 2018; Lehmphul et al. 2019.*

[46] *Molloy et al. 2017; Molloy et al. 2020.*

fortified sites from the period have been located and partly excavated,[47] and work on non-fortified settlements started as well.[48] As a consequence, our understanding of Late Bronze Age settlement and society in the region has been considerably transformed during the last decade.[49]

Since 2020, we have been able to launch a new project that will examine the Late Bronze Age settlement history of this region, and the economic organisation and socio-political make-up of the communities living here between ca. 1400 and 1100 BC.[50] Nevertheless, due to the much larger geographic scale of the emergence of these mega-forts, a macro-regional approach – and the close collaboration of multiple international research teams with a micro-regional and regional focus – seems indispensable for the understanding of these sites and the historical processes[51] that led to their appearance and later abandonment.[52]

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Bronk Ramsey 2009 C. Bronk Ramsey: Bayesian analysis of radiocarbon dates. Radiocarbon 51/1 (2009) 337–360. https://doi.org/10.1017/S0033822200033865

[47] E.g. Végegyháza-Zsibrik-domb: *Lichtenstein – Rózsa 2008; Milo et al. 2009;* Újkígyós-Örökföldek: *Bóka 2020;* Munar-Wolfsberg (Romania): *Sava – Gogâltan 2017;* Medgyesegyháza-Lagzi-dűlő: *Szeverényi et al. 2017* 143–144; Makó-Rákos-Császárvár: *Szeverényi et al. 2017* 139–141.

[48] E.g. Şagu, Sit A1_1 (Romania): *Sava – Hurezan – Mărginean 2011; Sava 2019;* Csanádalberti-Fekete-halom: *Szeverényi et al. 2021* 60–61.

[49] Compare *V. Szabó 2004b* for earlier views, based on older data.

[50] *Szeverényi et al. 2021.*

[51] *Czukor et al. 2017; Szeverényi et al. 2017.* See also *Molloy 2022 preprint* for a wider review of Late Bronze Age site abandonment.

[52] Our current work at the site is supported by the NKFI (National Research, Development and Innovation Office) grant No. FK 135805. Previous work was carried out with the financial support of the National Cultural Fund (NKA) grants Nos. 3234/230, 3234/269 and 207134/306, the Móra Ferenc Museum, Szeged, and Duna Aszfalt Kft. We would like to thank Gábor Márkus (Archeodata 1998 Bt.) and Tamás Polányi (Sandbox Archaeology) for their generous help with geomagnetic prospection, and András Balogh (Pazirik Kft.) for the HD aerial images.

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