CADASTRAL FIELD WORKS ON PREHISTORIC MOUNDS IN THE CENTRAL PART OF THE TISZÁNTÚL REGION

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Abstract: The aim of the present paper is to provide a comprehensive report on the cadastral works of mounds in the central part of Tiszántúl (the region east of the Tisza River), taking the burial mounds of the Late Copper Age Yamnaya entity as a starting point. Theoretical and field research began around the beginning of the 19th century, and in the second half of the 20th century systematic site registration took place, mainly due to the so-called ‘Archaeological Sites of Hungary’ project. Later on national surveys and local initiatives were carried out, but they are of very different quality. In addition to the main characteristics and results of the creation of these cadastres, we also outline further scientific studies on mounds.

Keywords: burial mounds (kurgans), Late Copper Age, Yamnaya entity, cadastral field works, Tiszántúl region

INTRODUCTION

Mounds are not only salient, determining cultural elements of the landscape of the Great Hungarian Plain, but are also of outstanding geological and conservational significance. Through their detailed, multifaceted examination we can study not only the history of millennia, the everyday lives of the people and communities, their archaeological heritage and customs buried in them, but also the inhabited environment, the flora and fauna that once lived there, and the geological formations on the surface and underneath.¹ Their names and the stories associated with them reveal a hundreds of years’ long history.²

In the Carpathian Basin, primarily in the Great Hungarian Plain, and especially in the region east of the Tisza River, from the Late Copper Age to the Early Bronze Age, the Yamnaya entity of Eastern European origin – also called the People of the Pit Grave Kurgans – played a decisive role.³ Their heritage are the thousands of mounds that still exist today. Other cultures that also built and used mounds in the Great Hungarian Plain and in the Tiszántúl region during prehistory and the Migration Period (Scythians, Sarmatians, Hungarians, Cumans, etc.) are not covered in our paper. The reason for this is that, compared to the Yamnaya culture, their barrows are relatively small in number, and for some ethnic groups it is highly questionable if they practiced mound building in the Carpathian Basin at all, despite the fact that there had been strong tendencies in this regard in all of them in Eastern Europe.⁴

¹ BEDE 2008, 5–9; PETŐ–BARCZI 2011; DANI–HORVÁTH 2012; BARCZI 2016; BEDE 2016; RÁKÓCZI 2016; DEÁK 2018.

² TORMA 2008; TORMA 2015, 71–72; BEDE 2016, 56–74.

³ ECSÉDY 1979; DANI–HORVÁTH 2012.

⁴ PÁLÓCZI HORVÁTH 1996, 18, 30; KULCSÁR 1998, 40–46.

STUDY AREA

Our research area is the same as that of the Körös-Maros National Park (*Fig. 1*) which – with the exception of the Partium region – covers roughly the middle part of the Tiszántúl region. Since the official boundaries of a public institution define our study area, it is unfortunately necessary, at least in part, to have artificial or political boundaries. The borders are roughly: the Tisza in the west; in the south the current state border delineated by the Bánság-sarok (Banat Corner), the Maros River and the Csanádi-hát area (Csanád Ridge); in the east the current state border; in the north the midline of the Kis-Sárrét (Little Sárrét) and Nagy-Sárrét (Great Sárrét) (which is also the administrative boundary of Békés County) and the Körös floodplain.⁵

In this paper, the Great Plain refers to the Great Hungarian Plain defined as a geographical concept with only natural (and not political) borders. An integral part of this is the Bánság (Banat of the Temes/Timiş and Torontál), which is the actual southern Tiszántúl. There is a tendency in the current interpretation of this landscape and common thinking to forget that Bánság (Banat) is part of Tiszántúl and tries to force the landscape concept of Tiszántúl within the modern borders determined in the Trianon Treaty. In contrast, Tiszántúl as a geographical term (geographical name) has been used since the Middle Ages – from the 16th century onwards – and traditional geographical descriptions thinking within the framework of the Carpathian Basin as a geographical unit have all interpreted this area this way.⁶

CADASTRAL WORKS AND THEIR RESULTS

In the past two hundred years so much diverse and multifaceted research has affected the mounds of our research area that it is impossible to present all; here we are trying to outline concrete mound investigations as the direct antecedents of our own survey. For each of the regions we have already described in detail the archaeological surveys and the research on landscape and environmental history, first is in the vicinity of Szentes and then in other parts of the study area as well.⁷

Already the very first, 19th-century local works emphasized the importance of collecting and organizing the mounds, and geographers were looking for the regularities in their location.⁸ In the 1850s and 1860s, the geologist József Szabó studied the structure of the mounds of Békés and Csanád Counties in addition to other regions.⁹ The local history literature of the 19th century also often mentions the mounds, usually highlighting their local aspects, but with little recognition of their wider connections and the relationship between the individual regions at that time.

Systematic research started only from the first half of the 20th century. In his writing Béla Kozma examines the distribution and geomorphological characteristics of the mounds through the eye of a geographer. His map appendix, which was edited on the basis of a later, lower resolution version of the Third Military Survey, depicts the entire Great Plain, including the entire Tiszántúl region; it depicts 127 mounds in our study area (*Fig. 2*).¹⁰

In our area, the first work specifically designed to register mounds is connected to the name of Gyula Szeghalmi (*Fig. 3*), who collected the mounds of Nagy-Sárrét area belonging to the Szeghalom District in Békés County, a total of 60.¹¹

József Csalog, as director of the Koszta József Museum, surveyed the most important mounds in the wider area of Szentes. He examined their condition, environment, relationship to each other and to other sites, and collected scattered finds from their surface. He made a repository report (field log) of the surveyed mounds and the finds found during each survey. He also mentions a map he himself made, showing the results of the mound registration efforts in the vicinity of Szentes; however, we have not been able to find it so far. He made useful observations about the geographic location of the mounds, their relief and hydrological context, and other related phenomena observable in the field, such as rings surrounding the mounds.¹² It is fortunate to have his field observa-

⁵ DÖVÉNYI 2010; DEÁK 2010; JAKAB–DELI 2012, 26–27.

⁶ KISS 1988, II. 653; KÁDÁR 1941.

⁷ BEDE 2008, 10–17; BEDE 2016, 17–25.

⁸ PERECSENYI NAGY 1819, 80; NAGY 1819, 37.

⁹ SZABÓ 1859.

¹⁰ KOZMA 1910, Pl. XXVII.

¹¹ SZEGHALMI 1912; SZEGHALMI 1936.

¹² CSALOG 1954, 82.

Fig. 1. The study area with the border lines of settlements and surveyed land units.

1: Eastern part of Csongrád County; 2: Csanádi-hát area; 3: Békési-hát area; 4: Nagy-Sárrét area; 5: Kis-Sárrét area

tions made in the first half of the 1950s, preceding the spread of deep ploughing and heavy-duty machines, so he could see the mounds in a more original and intact state.¹³

In Békés County, the first mound registration works were launched within the framework of the 'Magyarország Régészeti Topográfiája' (= MRT, 'Archaeological Sites of Hungary') research program. The MRT staff set the goal of gathering, in the long term, all the sites that could still be detected and identified by field walking. This is how the research started in the northern and central parts of Békés County, which were jointly carried out by the experts of the Institute of Archaeology of the Hungarian Academy of Sciences and the Békés County Museum Directorate. The work started in 1969 and is practically still in progress.¹⁴ The results of the decades-long effort are three published volumes¹⁵ and one more in preparation.¹⁶ In addition to the sites of other periods, the mounds were also collected as comprehensively as possible, adding accurate, reliable data and status descriptions to the cadastre (Fig. 4; Table 1). A total of 644 kurgans were registered during the surveys.

The next cadastre was created by Dénes Virágh for István Ecsedy's book discussing the kurgans of the Tisza region; he collected 909 mounds from our study area.¹⁷ His work relies almost entirely on the results of the MRT, but he also conducted independent research, mainly on the basis of the First and Second Military Surveys,

¹³ BEDE 2008, 14.

¹⁴ BAKAY 1971.

¹⁵ MRT 6; MRT 8; MRT 10.

¹⁶ MRT IV/4.

¹⁷ ECSÉDY–VIRÁGH 1975; VIRÁGH 1979.

Fig. 2. Béla Kozma's map with kurgans in the study area (KOZMA 1910, Pl. XXVII)

but without field surveys and identification (Fig. 5; Table 1). The cadastre is a laconic list, never including the exact location, and only marks the mounds on a large-scale sketch map. Since Virágh did not check the data obtained from the maps in the field, there were a relatively large number of elevated points that are not anthropogenic mounds but natural geological formations.

In 1979, with the help of the interwar version of the Third Military Survey, on-site inspections, and even test coring, Gábor Rózsa prepared a mound cadastre for Csongrád County, which contained a total of 118 mounds in our test area.¹⁸ The most significant mounds appear – on a sketch map – with their best-known names (Fig. 6; Table 1). Rózsa also copied the mound descriptions of the Béla Bodnár's toponym collection for geographic purposes¹⁹ and provided them with comments. In many cases he arbitrarily and erroneously criticized Bodnár's more thorough and accurate work.²⁰

Later on László Szelekovszky sketched a brief review of the mounds of Békés County. He listed 558 in his cadastre. Most of this list was compiled from the MRT volumes, but – mainly in the central and southern parts of the county – he also carried out independent research.²¹ However, his work is superficial and abridged; the list does not contain coordinates, and the map appendices are difficult to interpret (Fig. 7).

In 2001, the Institute of Archaeology of the Eötvös Loránd University also compiled a list of mounds²² for which the data from the MRT and Dénes Virágh's work were copied – most often erroneously. This work is virtually unusable due to the inaccuracy of the coordinates; furthermore, no field surveys were made. There are 159 mounds in the list from our area, whose coordinates are more or less real (accurate within 100 m).

¹⁸ RÓZSA 1979.

¹⁹ BODNÁR 1983.

²⁰ RÓZSA 2002.

²¹ SZELEKOVSKY 1999.

²² ELTE 2001.

Table 1.
Cadastral works on mounds in the study area

Settlement	MRT 6, 8, 10, IV/4	VIRÁGH 1979	RÓZSA 1979	<i>Kunhalom-program</i> 2002	BEDE 2016
Almáskamarás	–	0	–	0	4
Ambrózfalva	–	0	0	0	0
Apátfalva	–	3	0	0	5
Árpádhalm	–	5	0	2	17
Battonya	–	15	–	12	42
Békés	25	12	–	6	59
Békéscsaba	8	2	–	2	18
Békéssámsón	–	3	–	0	9
Békésszentandrás	17	15	–	8	26
Bélmegyer	10	8	–	7	31
Biharugra	41	41	–	35	51
Bucsa	4	4	–	0	7
Csabacsüd	3	3	–	1	3
Csabaszabadi	0	3	–	0	4
Csanádalberti	–	1	1	1	4
Csanádapáca	–	0	–	1	10
Csanádpalota	–	2	0	3	12
Csárdaszállás	11	8	–	7	20
Csorvás	–	2	–	1	12
Derekegyház	–	5	4	2	6
Deszk	–	5	3	14	25
Dévaványa	70	70	–	69	114
Doboz	1	3	–	0	5
Dombegyház	–	8	–	6	29
Dombiratos	–	2	–	0	4
Ecsefalva	6	4	–	4	16
Elek	–	5	–	0	12
Eperjes	1	6	4	5	10
Fábiánsebestyén	–	5	6	0	13
Ferencszállás	–	1	0	0	4
Földeák	–	5	2	2	6
Füzesgyarmat	46	46	–	40	74
Gádos	–	0	–	0	1
Gerendás	–	0	–	0	7
Geszt	30	27	–	0	48
Gyomaendrőd	65	53	–	28	124
Gyula	29	26	–	10	64
Hódmezővásárhely	–	42	20	20	166
Hunya	0	0	–	0	0
Kamut	0	1	–	0	1
Kardos	0	0	–	0	1
Kardoskút	–	3	–	1	9
Kaszaper	–	1	–	0	1
Kertészsziget	6	6	–	4	6
Kétegyháza	6	24	–	1	72
Kétsoprony	0	0	–	0	1
Kevermes	–	5	–	2	18
Királyhegyes	–	3	2	1	5
Kisdombegyház	–	2	–	0	7
Kiszombor	–	9	5	2	11
Klárafalva	–	3	1	3	3

Table 1. cont.

Settlement	MRT 6, 8, 10, IV/4	VIRÁGH 1979	RÓZSA 1979	Kunhalom-program 2002	BEDE 2016
Kondoros	0	3	–	0	4
Körösladány	36	35	–	14	63
Körösnagyharsány	8	8	–	3	10
Köröstarcsa	12	15	–	4	24
Körösújfalú	19	19	–	3	31
Kötegyán	0	0	–	0	0
Kövegy	–	0	0	0	0
Kunágota	–	1	–	0	10
Kunszentmárton	–	1	–	1	1
Kübekháza	–	8	1	3	11
Lőkősháza	–	1	–	0	7
Magyarbánhegyes	–	0	–	0	0
Magyarcsanád	–	12	1	4	22
Magyardombegyház	–	0	–	0	0
Makó	–	19	10	11	48
Maroslele	–	3	1	2	5
Mártély	–	3	3	2	25
Medgyesbodzás	–	0	–	0	7
Medgyesegyháza	–	5	–	3	20
Méhkerék	2	1	–	0	5
Mesterszállás	–	0	–	0	0
Mezőberény	12	13	–	3	40
Mezőgyán	15	10	–	0	25
Mezőhegyes	–	2	1	1	5
Mezőkovácsháza	–	1	–	0	9
Mezőtúr	–	1	–	0	4
Mindszent	–	8	7	4	9
Murony	0	0	–	0	0
Nagybánhegyes	–	0	–	0	0
Nagyér	–	0	0	0	1
Nagykamarás	–	9	–	3	29
Nagylak	–	1	0	0	2
Nagymágocs	–	1	0	0	10
Nagyszénás	–	5	–	3	6
Nagytóke	–	7	6	4	23
Óföldsétek	–	8	3	2	20
Okány	4	3	–	0	4
Orosháza	–	2	–	0	27
Öcsöd	–	0	–	0	3
Örménykút	6	5	–	5	7
Pitvaros	–	2	1	1	10
Pusztaföldvár	–	0	–	0	3
Pusztatottlaka	–	1	–	1	11
Sarkad	0	0	–	0	3
Sarkadkeresztúr	1	0	–	7	17
Szabadkígyós	3	0	–	1	16
Szarvas	24	21	–	11	46
Szeged	–	0	0	0	0
Szeghalom	58	58	–	16	108
Szegvár	–	7	7	4	17
Székkutas	–	15	5	4	47
Szelevény	–	0	–	0	0

Table 1. cont.

Settlement	MRT 6, 8, 10, IV/4	VIRÁGH 1979	RÓZSA 1979	Kunhalom-program 2002	BEDE 2016
Szentes	2	42	24	17	86
Tarhos	1	0	–	0	6
Telekgerendás	0	0	–	0	1
Tiszaföldvár	–	0	–	0	0
Tótkomlós	–	2	–	1	15
Túrkeve	8	4	–	1	18
Újkígyós	5	0	–	0	27
Újszalonta	0	0	–	0	0
Végegyháza	–	3	–	0	6
Vésztő	28	28	–	14	58
Zsadány	21	19	–	21	37
total	(644)	909	(118)	474	2335

OUR SURVEY AND THE MAIN RESULTS

Our research was carried out with the commission and support of the Körös-Maros National Park Directorate. Our task was to fully map and survey the state of the mounds in the operation area of the directorate. This work was carried out through interconnected landscapes (*Fig. 1*): 1. Csongrád County's part in the Tiszántúl region (665 mounds); 2. the Csanádi-hát area (Csanád Ridge) (252 mounds); 3. the Békési-hát area (Békés Ridge) (552 mounds); 4. the Nagy-Sárrét of Békés County (535 mounds); 5. the Kis-Sárrét of Békés County (331 mounds). It covers the administrative area of 114 settlements with a total area of 797,703 ha (or nearly 8 000 km²); a total of 2335 mounds were mapped (*Fig. 9; Table 1*).²⁴

In addition to 18th–20th-century manuscript and printed maps, we also used archival sources, repository reports, and literature from local history, archaeology, ethnography, onomastics and natural sciences.

The primary objective of the survey of the mounds of the central Tiszántúl region was to search for mounds with natural and landscape value, and those that had been hitherto unknown; thus, we also carried out a survey of their natural state, and geoarchaeological and environmental historical aspects were also kept in mind. We were also curious about the main geomorphological characters, natural conditions and the ecological features and values of the mounds of a well-defined and relatively uniform landscape. This required the complete collection of the mounds of the study area. Furthermore, such a large-scale, representative study with a large number of mounds focusing on multiple details can provide a method and model for future mound research that will allow us to compare the various – often genetically different – landscapes of the Great Hungarian Plain. In order to collect data, in addition to the basic cadastral research and status survey, we also carried out landscape archaeological, environmental historical, geomorphological, archaeological stratigraphic, GIS, botanical and onomastic studies.

OTHER SCIENTIFIC EXAMINATIONS OF THE MOUNDS

In the central Tiszántúl, not only mound registering and status surveys have been carried out; some researchers also conducted other scientific investigations and for the sake of the review we would like to mention these as well in a paragraph.

The geomorphological and landscape geographical features, anthropogenic effects, microclimate and soil conditions,²⁵ and later the botanical aspects of the kurgans of Kétegyháza were investigated²⁶ and their reconstruction possibilities assessed.²⁷

²⁴ BEDE 2016, 27–55.

²⁵ DÖVÉNYI *et al.* 1977, 48–49, Fig. 1; RAKONCZAI 1986, 10, 16; DÖVÉNYI 1986, 83, 94; BARCZI 2016, 102–107.

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²⁶ KERTÉSZ 2000; MEDOVARSKY 2010.

²⁷ NAGY 2012; BEDE–CZUKOR 2018.

Fig. 4. Kurgans near Gyomaendrőd on the map by Archaeological Sites of Hungary (MRT 8, Annex 2)

Botanists have gathered floristic data from a number of kurgans in the Maros–Körös Interfluve.²⁸ They evaluated the vegetation of a few mounds near Szentes,²⁹ characterized the weeds and landscape history of the Hegyes-halom near Mindszent,³⁰ investigated the soil and the connections between hydrology and vegetation on the Kántor-halom near Szentes,³¹ surveyed the vegetation of the Sáp-halom near Szegvár,³² and in addition to the study of vegetation, the effects of farming were also analysed at the Hegyes-halom near Kéthegyháza, the Bekai-halom in Magyarcsanak and the Bőve-halom in Hódmezővásárhely.³³ Complete flora lists were made on all the mounds of the Csanádi-hát area with permanent vegetation³⁴ and the mounds around Szarvas were also surveyed.³⁵

Zoologists also gathered information about periwinkle insects,³⁶ beetles,³⁷ molluscs³⁸ and vertebrate fauna.³⁹

²⁸ KOVÁCS–MOLNÁR 1986, 187–192; MOLNÁR 1992, 22–23; KAPOCSI *et al.* 1998; PENKSZA–KAPOCSI 1998; KERTÉSZ 2000; TÓTH 2003; JAKAB–TÓTH 2003; DEÁK 2018, 78–81.

²⁹ KISPÁL 2002; 2004.

³⁰ BEDE 2016, 89.

³¹ BARCZI 2003; VONA–PENKSZA 2004; PENKSZA *et al.* 2005; HERCZEG *et al.* 2006b.

³² HERCZEG *et al.* 2006a.

³³ PENKSZA *et al.* 2005; HERCZEG 2005; HERCZEG *et al.* 2009; BARCZI *et al.* 2011; HERCZEG 2015, 43–53.

³⁴ CSATHÓ 2008; BEDE 2016, 86–87.

³⁵ DÉTÁR 2012.

³⁶ KRAUSZ *et al.* 2000.

³⁷ MERKL *et al.* 2014.

³⁸ DOMOKOS 2018a; DOMOKOS 2018b.

³⁹ CSIZMAZIA 1982; CSIZMAZIA 1986.

Fig. 5. Dénes Virágh's map with the kurgans in the Kis-Sárrét area (VIRÁGH 1979, Suppl. 4)

Fig. 6. Cadastre of Csongrád County by Gábor Rózsa with the kurgans near Szegvár (RÓZSA 1979)

Antónia Marcsik⁴⁰ and Zsuzsanna K. Zoffmann⁴¹ analysed several human skeletal remains discovered in kurgans in our area. Sándor Bökönyi investigated the vertebrate fauna from Kétegyháza,⁴² while the chemical composition of the ochre pieces from the Tiszántúl region was analysed by György Duma.⁴³

Attila Rákóczi analysed the ecological changes on previously cultivated mounds. An important aspect of his research was the mapping of the local communities' relationship with the barrows.⁴⁴

CONCLUSION

In the study area – the central Tiszántúl region – there has been continuous development both professionally and methodologically and with regard to instrumental analyses in connection with the registration of mounds. The published and unpublished (in preparation) volumes for Békés County of the 'Archaeological Sites of Hungary' (MRT) series provide a milestone in this research. Already the authors of the topographic volumes had recognized the need to analyse manuscript maps and archival documents, and due to the use of these sources, fundamental observations were made regarding the number, location and condition of the mounds. Some of the subsequent cadastral works also used this elaborate working method in their own surveys.

In the future it is absolutely necessary to include other sample areas in the Great Plain (especially east of the Tisza) with similar sample numbers and sizes, so that the properties of the mounds of each region can be compared. It is important that surveys and evaluations should be consistent on their own, but they should also be comparable to the results of other surveyed areas. We are thinking here primarily of the use of the sources, the protocol of field observations and site surveys, and the need to strive for completeness. We are confident that these regional researches on mounds will start in the near future in other parts of the Carpathian Basin as well in increasing numbers.

⁴⁰ MARCSIK 1979.

⁴¹ K. ZOFFMANN 1978; K. ZOFFMANN 1984.

⁴² BÖKÖNYI 1979.

⁴³ DUMA–ECSÉDY 1975; DUMA 1979.

⁴⁴ RÁKÓCZI 2016.

Fig. 7. László Szelekovszky's map with the mounds of Békés County (SZELEKOVSKY 1999, 3)

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Fig. 8. The assessed kurgans by the 'Kunhalom project' in the study area (based on *Kunhalom-program* 2002)

Fig. 9. The registered burial mounds in the study area from our survey (2335 kurgans) (BEDE 2016, 134)

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REFERENCES

- BARCZI 2003 = A. BARCZI: Kunhalmok, mint a vegetációtörténet és a talajfejlődés őrei [Mounds like guardians of the history of vegetation and soil development]. In: III. Kárpát-medencei Biológiai Szimpózium. 2003. október 29–31. Eds: K. Penksza, Z. Korsós, I. Papp. Budapest 2003, 5–11.
- BARCZI *et al.* 2011 = A. BARCZI–K. PENKSZA–K. JOÓ: Soil-plant associations on kurgans of the Great Hungarian Plain. *Agrokémia és Talajtan* 60 (2011) 293–304.
- BARCZI 2016 = A. BARCZI: Kunhalmok eltemetett talajainak vizsgálata [Examination on buried soils of mounds]. Gödöllő 2016.
- BEDE 2008 = Á. BEDE: Szentesi halmai (Mounds of Szentesi). Szentesi műhely füzetek 10. Szentesi 2008.
- BEDE 2016 = Á. BEDE: Kurgánok a Körös–Maros vidékén... Kunhalmok tájrégészeti és tájökölógiai vizsgálata a Tiszántúl középső részén (Kurgans in the Land of the Körös and Maros Rivers... Landscape archaeological and landscape ecological investigations on mounds in the central part of the Tiszántúl region, Hungary). Budapest 2016.
- BEDE–CZUKOR 2018 = Á. BEDE–P. CZUKOR: A kétegyházi kurgánmező roncsolt halmainak helyreállítási javaslata (Reconstruction proposal for damaged mounds of the kurgan field near Kétegyháza, Hungary). *Crisicum* 10 (2018) 7–30.
- BODNÁR 1983 = B. BODNÁR: Hódmezővásárhelynek és környékének földrajzi nevei [Toponyms of Hódmezővásárhely and its Vicinity]. *Tanulmányok Csongrád megye történetéből* 7. Szeged 1983.
- BÖKÖNYI 1979 = S. BÖKÖNYI: Copper Age vertebrate fauna from Kétegyháza. In: *ECSEDY* 1979, 101–118.
- CSALOG 1954 = J. CSALOG: Az alföldi halomkutatás [Research on mounds in the Great Plain]. *MűzHír* 4 (1954) 82–85.
- CSATHÓ 2008 = A. I. CSATHÓ: Ősi sztyepprémaradvány a medgyesegyházi temetőben [Ancient steppe fragment in the cemetery of Medgyesegyháza]. In: *A Magyar Biológiai Társaság XXVII. Vándorgyűlése, 2008. szeptember 25–26.* Eds: Z. Korsós, Gy. Gyenis, K. Penksza. Budapest 2008, 19–25.
- CSIZMAZIA 1982 = Gy. CSIZMAZIA: A kurgánok gerinces állatainak vizsgálata [Examination on vertebrates of the kurgans]. *MKCSM* 1982 (1982) 209–214.
- CSIZMAZIA a 1986 = Gy. CSIZMAZIA: Mammológiai vizsgálatok a Szabadkígyósi Tájvédelmi Körzetben. I.: A szikes puszta emlősei (Mammologic investigations in the Szabadkígyós Landscape Protection Area. I.: Mammals of the salt steppe). *Környezet- és Természetvédelmi Évkönyv* 6 (1986) 311–331.
- DANI–HORVÁTH 2012 = J. DANI–T. HORVÁTH: Óskori kurgánok a magyar Alföldön. A Gödörsíros (Jamnaja) entitás magyarországi kutatása az elmúlt 30 év során. Áttekintés és revízió [Ancient Kurgans on the Great Hungarian Plain. The research of the Pit Grave (Yamnaya) Entity in the last 30 years in Hungary. Survey and revision]. Budapest 2012.
- DEÁK 2018 = B. DEÁK: Természet és történelem. A kurgánok szerepe a sztyeppi vegetáció megőrzésében [Nature and History. Role of the kurgans in the conservation of the steppe vegetation]. Budapest 2018.
- DEÁK 2010 = J. Á. DEÁK: Csongrád megye kistájainak élőhelymintázata és tájökölógiai szempontú értékelése (Habitat-pattern and landscape ecological evaluation of the microregions of Csongrád county). [Diss. University of Szeged. Manuscript.] Szeged 2010.
- DÉTÁR 2012 = L. DÉTÁR: Botanikai vizsgálatok Szarvas környéki kunhalmokon [Botanical investigations on mounds in the vicinity of Szarvas]. In: *Válogatott tudományos diákköri munkák 2011-ben.* Eds: E. Csengeri, J. Szitó. *Agrártörténeti füzetek* 33. Békéscsaba–Szarvas–Gyula 2012, 11–49.
- DOMOKOS 2018a = T. DOMOKOS: Adatok néhány Hódmezővásárhely környéki halmon található gyepterjesztéséről (Data to the molluscan associations of some mounds in the environs of Hódmezővásárhely [Trans-Tisza region, Csongrád county]). *Crisicum* 10 (2018) 107–117.
- DOMOKOS 2018b = T. DOMOKOS: Szórványadatok Mindszent (DS 34, 35, 45) recens malakofaunájához (*Mollusca*), különös tekintettel néhány halmára (Harangos, Nagy, Gál, Hegyes, Koszorús, Móra, Ludas) (1986–2015) (Sporadic data on the recent Molluscs of Mindszent Town outskirts [Hungary, Csongrád County], with special reference to some mounds [Harangos, Nagy, Gál, Hegyes, Koszorús, Móra, Ludas], 1986–2015). *Crisicum* 10 (2018) 119–141.
- DÖVÉNYI 1986 = Z. DÖVÉNYI: A szabadkígyósi puszta mikroklimatikus viszonyai (The micro-climatic conditions of the Szabadkígyós steppe). *Környezet- és Természetvédelmi Évkönyv* 6 (1986) 81–97.
- DÖVÉNYI 2010 = Z. DÖVÉNYI (ed.): Magyarország kistájainak katasztere [Cadastre of the Small Landscape Regions in Hungary]. Budapest 2010. – Second, rev., extended ed.
- DÖVÉNYI *et al.* 1977 = Z. DÖVÉNYI–L. MOSOLYÓ–J. RAKONCZAI–J. TÓTH: Természeti és antropogén folyamatok földrajzi vizsgálata a kigyósi pusztán (Geographical survey of natural anthropogen processes on the pusztai Kígyós). *Békés Megyei Természetvédelmi Évkönyv* 2 (1977) 43–72, 161–163, 174–176.
- DUMA 1979 = Gy. DUMA: Chemical analysis of the ochre-clods in some pit-graves. In: *ECSEDY* 1979, 99.
- DUMA–ECSEDY 1975 = Gy. DUMA–I. ECSEDY: Die “Ockerklumpen” der Grubengrab-kultur – Jamnaja-kultur. *MittArchInst* 4/1973 (1975) 129–133.

- ECSEDY 1979 = I. ECSEDY: The People of the Pit-Grave Kurgans in Eastern Hungary. *FontArchHung*. Budapest 1979, 1–85.
- ECSEDY–VIRÁGH 1975 = I. ECSEDY–D. VIRÁGH: Vorbericht über eine Untersuchung nach der Verbreitung der Kurgane in Ostungarn. *MittArchInst* 4/1973 (1975) 31–35.
- ELTE 2001 = Kunhalom és földvár kataszter [Cadastral of Mounds and Earthworks]. Manuscript. Budapest 2001.
- HERCZEG 2005 = E. HERCZEG: Botanikai vizsgálatok kunhalmok dél-tiszántúli löszgyepein (Botanical investigation of loess grass vegetation of the southern part of the Tiszántúl kurgans [Hungary]). *Kanitzia* 13 (2005) 45–54.
- HERCZEG 2015 = E. HERCZEG: Dél-tiszántúli gyepterületek botanikai feltárása és hasznosítási lehetőségei (Botanical Exploration and Potential Utilization of Grasslands at South-Tiszántúl). [Diss. Szent István University. Manuscript.] Gödöllő 2015.
- HERCZEG *et al.* 2006a = E. HERCZEG–A. BARCZI–K. PENKSZA: Examinations on plants soil and in grasslands of South-east Hungary (Floristical summary and the vegetation of Sáp kurgan) (Dél-tiszántúli kunhalmok botanikai és talajtani vizsgálatai. Florisztikai összefoglaló, Sáp-halom vegetációja). *Tájékológiai Lapok* 4 (2006) 95–102.
- HERCZEG *et al.* 2006b = E. HERCZEG–SZ. SZENTES–K. PENKSZA: Kunhalmok aspektusai [Aspects of mounds]. In: *A Magyar Biológiai Társaság XXVI. Vándorgyűlése*, 2006. november 9–10. Eds: Z. Korsós, Gy. Gyenis, K. Penksza. Budapest 2006, 239–244.
- HERCZEG *et al.* 2009 = E. HERCZEG–T. SZERDAHELYI–G. GUBCSÓ: Botanikai vizsgálatok Dél-Tiszántúli gyepekben (Botanical investigations in grasslands of South-East Hungary). *Crisicum* 5 (2009) 29–49.
- JAKAB–DELI 2012 = G. JAKAB–T. DELI: A Dél-Tiszántúl természetföldrajzi viszonyai [Natural conditions of the South Tiszántúl region]. In: *A Körös-Maros Nemzeti Park növényvilága*. Ed.: G. Jakab. A Körös-Maros Nemzeti Park természeti értékei 1. Szarvas 2012, 26–33.
- JAKAB–TÓTH 2003 = G. JAKAB–T. TÓTH: Adatok a Dél-Tiszántúl flórájának ismeretéhez (New data to the flora of the South-Tiszántúl [SE-Hungary]). *Kitaibelia* 8 (2003) 89–98.
- KÁDÁR 1941 = L. KÁDÁR: A magyar nép tájszemlélete és Magyarország tájnévei [Landscape Approach of the Hungarians and Landscape Toponyms of Hungary]. *A magyar táj- és népismeret könyvtára* 3. Budapest 1941.
- KAPOCSI *et al.* 1998 = J. KAPOCSI–E. DOMÁN–I. BIRÓ–B. FORGÁCH–T. TÓTH: Florisztikai adatok a Körös–Maros Nemzeti Park működési területéről (Some floristical data from the operation area of the Körös–Maros National Park). *Crisicum* 1 (1998) 75–83.
- KERTÉSZ 2000 = É. KERTÉSZ: Adatok a Dél-Tiszántúl flórájához (Data concerning the flora of South-Tiszántúl). *BMMK* 21 (2000) 5–48.
- KISPÁL 2002 = Z. KISPÁL: A Mindszenti és a szentesi kunhalmok természetvédelmi-botanikai vizsgálata [Nature Conservation and Botanical Investigation on the Mounds in Mindszent and Szentese]. [Thesis, Szent István University. Manuscript.] Budapest 2002
- KISPÁL 2004 = Z. KISPÁL: A Mindszenti és szentesi kunhalmok természetvédelmi-botanikai vizsgálata [Nature conservation and botanical investigation on the mounds in Mindszent and Szentese]. In: *A kunhalmokról – más szemmel (Kurgans)*. Ed.: A. Tóth. Kisújszállás–Debrecen 2004, 71–79.
- KISS 1988 = L. KISS: Földrajzi nevek etimológiai szótára [Etymological Dictionary of toponyms]. I–II. Budapest 1988. Second, impr., extended ed.
- KOVÁCS–MOLNÁR 1986 = A. KOVÁCS–Z. MOLNÁR: A Szabadkígyósi Tájvédelmi Körzet fontosabb növénytársulásai [Important plant associations of the Szabadkígyós Landscape Protection Area]. *Környezet- és Természetvédelmi Évkönyv* 6 (1986) 165–199.
- KOZMA 1910 = B. KOZMA: A kunhalmok elhelyezkedése az Alföldön [The locality of the mounds in the Great Plain]. *FrK* 38 (1910) 437–443.
- KRAUSZ *et al.* 2000 = K. KRAUSZ–J. PÁPAI–L. KÖRMÖCZI–A. HORVÁTH: Structure of Orthoptera assemblages in step-like habitat islands and neighbouring grasslands. *Articulata – Zeitschrift der Deutsche Gesellschaft für Orthopterologie e.V.* 15 (2000) 167–177.
- KULCSÁR 1998 = V. KULCSÁR: A Kárpát-medencei szarmaták temetkezési szokásai (The burial rite of the Sarmatians of the Carpathian Basin). *Múzfűz* Aszód 49. Aszód 1998.
- Kunhalom-program* 2002 = Országos kunhalom-kataszter és adatbázis [National Kunhalom Cadastre and Database]. Manuscript (database). Budapest–Kisújszállás 2002.
- MARCSIK 1979 = A. MARCSIK: The anthropological material of the Pit-grave kurgans in Hungary. In: ECSEDY 1979, 87–98.
- MEDOVARSZKY 2010 = M. MEDOVARSZKY: Az Elek–Kétegyháza–Szabadkígyós térségében levő kunhalmok természetvédelmi értéke [Nature value of the mounds in region of Elek, Kétegyháza and Szabadkígyós]. [Thesis, University of Debrecen. Manuscript.] Debrecen 2010.
- MERKL *et al.* 2014 = O. MERKL–V. KÖDÖBÖCZ–T. DELI–T. DANYIK: Bogárfaunisztikai adatok a Dél-Tiszántúlról (*Coleoptera*) (Faunistic data to the beetles from the south-eastern Great Hungarian Plain [*Coleoptera*]). *Crisicum* 8 (2014) 99–152.

- MOLNÁR 1992 = Zs. MOLNÁR: A Pítvarosi puszták növénytakarója, különös tekintettel a löszpusztagyepekre (Vegetation of "Pítvarosi-puszták" with special respect on loess hills). *Botanikai Közlemények* 79 (1992) 19–27.
- MRT 6 = I. ECSEDY–L. KOVÁCS–B. MARÁZ–I. TORMA: Békés megye régészeti topográfiája. IV/1.: A szeghalmi járás. MRT 6. Budapest 1982.
- MRT 8 = D. JANKOVICH B.–J. MAKKAY–B. M. SZÓKE: Békés megye régészeti topográfiája. IV/2.: A szarvasi járás. MRT 8. A Budapest 1989.
- MRT 10 = D. JANKOVICH B.–P. MEDGYESI–E. NIKOLIN–I. SZATMÁRI–I. TORMA: Békés megye régészeti topográfiája. IV/3.: Békés és Békéscsaba környéke. MRT 10. Budapest 1998.
- MRT IV/4 = I. SZATMÁRI (ed.): Békés megye régészeti topográfiája. IV/4.: A volt gyulai és sarkadi járás. Manuscript, in preparation.
- NAGY 1819 = F. NAGY: Hód Mező Vásárhely Várossa' rövid rajzolatja [The short sketch of Hódmezővásárhely town]. *TGy* 3/2 (1819) 34–57. – also edited in: Magyar tájak néprajzi felfedezői. A magyar néprajz klasszikusai. Ed.: A. Paládi Kovács. Budapest 1985, 221–232.
- NAGY 2012 = I. NAGY: A kétegyházi Török-halom rekonstrukciója (Restoration of Török-halom kurgan near Kétegyháza). *BMMK* 36 (2012) 87–108.
- PÁLÓCZI HORVÁTH 1996 = A. PÁLÓCZI HORVÁTH: Nomád népek a kelet-európai steppén [Nomad people in the steppe of East Europe]. In: Zúduló sasok. Új honfoglalók – besenyők, kunok, jászok – a középkori Alföldön és a Mezőföldön. Ed.: P. Havassy. Gyulai katalógusok 2. Gyula 1996, 7–36.
- PENKSZA–KAPOCSI 1998 = K. PENKSZA–J. KAPOCSI: A Maros-völgy edényes növényei. I. (Vascular Plants of Maros-valley. I.). *Crisicum* 1 (1998) 35–74.
- PENKSZA *et al.* 2005 = K. PENKSZA–M. VONA–E. HERCZEG: Elterő gazdálkodás során fenntartott természetes gyepek botanikai és talajtani vizsgálata tiszántúli kunhalmokon (Botanical and pedological investigations on natural grasslands under various management systems on ancient burial mounds in the Tiszántúl region of Eastern Hungary). *Növénytermelés* 54 (2005) 181–195.
- PERECSENYI NAGY 1819 = L. PERECSENYI NAGY: Arad vármegye régiségei közé számlálható halmokról [Mounds like ancient objects in Arad County]. *TGy* 3/2 (1819) 80–82.
- PETŐ–BARCZI 2011 = Á. PETŐ–A. BARCZI (eds): Kurgan Studies. An Environmental and Archaeological Multiproxy Study of Burial Mounds in the Eurasian Steppe Zone. *BAR IntSer* 2238. Oxford 2011.
- RÁKÓCZI 2016 = A. RÁKÓCZI: Kunhalmok és emberek az évezredek sodrában. A közös agrárpolitika tájvédelmi előírásainak hatásai a Békés megyei kunhalmok állapotára [Mounds and People in the Millenniums. Effects of common agricultural policy on landscape protection of the mounds in Békés County]. Budapest 2016.
- RAKONCZAI 1986 = J. RAKONCZAI: A szabadkígyósi pusztá földtani viszonyai és geomorfológiája (The geological conditions and the geomorphology of the Szabadkígyós steppe). *Környezet- és Természetvédelmi Évkönyv* 6 (1986) 7–18.
- RÓZSA 1979 = G. RÓZSA: Halmok. Csongrád megye. [Manuscript.] Szeged 1979. *Archaeological Repository of Móra Ferenc Museum (Szeged)* 851-82/1–2, 1300–1301-89.
- RÓZSA 2002 = G. RÓZSA: Hódmezővásárhely halmai és a jelentősebb laponyagok [Mounds and important "laponyags" of Hódmezővásárhely]. In: Dömötör János emlékkönyv. Tanulmányok a 80 éves Dömötör János tiszteletére. Ed.: V. Nagy. Múzeumi műhely 1. Hódmezővásárhely 2002, 36–67.
- SZABÓ 1859 = J. SZABÓ: A békés-csanádi halmok földtani tekintetben [The mounds of Békés and Csanád regions in geological aspects]. *Budapesti Szemle* 6 (1859) 175–187.
- SZEGHALMI 1912 = Gy. SZEGHALMI: A szeghalomvidéki (Békés megye) halmokról [About the mounds in the vicinity of Szeghalom (Békés County)]. *ArchÉrt* 32 (1912) 276–281.
- SZEGHALMI 1936 = Gy. SZEGHALMI: Szeghalmi járás története [History of Szeghalom District]. In: Békés vármegye. Ed.: Gy. Márkus. Budapest 1936, 349–383.
- SZELEKOVSKY 1999 = L. SZELEKOVSKY: Békés megye kunhalmjai [Mounds of Békés County]. Békéscsaba 1999.
- TORMA 2008 = I. TORMA: Laponyag (Tiszántúli halmok sajátos elnevezése) (Laponyag. A peculiar name of hillocks in the Trans-Tiszanian region). In: Név és valóság. A VI. Magyar Névtudományi Konferencia előadásai. Eds: A. Bölskei, I. N. Császi. A Károli Gáspár Református Egyetem Magyar Nyelvtudományi Tanszékének kiadványai 1. Budapest 2008, 272–277, 676.
- TORMA 2015 = I. TORMA: Régészeti vonatkozású helynevek a történelmi Magyarország területén (Locality names with archaeological implications in the territory of historical Hungary). *Archeometriai Műhely* 12 (2015) 67–73.
- TÓTH–TÓTH 2011 = Cs. TÓTH–A. TÓTH: The complex condition assessment survey of kurgans in Hungary. In: PETŐ–BARCZI 2011, 9–17.
- TÓTH 2003 = T. TÓTH: Újabb adatok a Dél-Tiszántúl flórájának ismeretéhez [New data for the knowledge of the flora in the South Tiszántúl region]. *A Pusztá* 20 (2003) 135–169.
- VIRÁGH 1979 = D. VIRÁGH: Cartographical data of the kurgans in the Tisza Region. In: ECSEDY 1979, 119–148.

- VONA–PENKSZA 2004 = M. VONA–K. PENKSZA: A szentesi Kántor-halom vegetációjának változása és ennek összefüggése a talaj vízháztartásával (Change of the vegetation on the Kántor kurgan and its relation with the soil water regime). *Tájökológiai Lapok* 2 (2004) 341–348.
- K. ZOFFMANN 1978 = Zs. K. ZOFFMANN: Das anthropologische Material der Ockergräber-Bestattung von Szentes–Besenyőhalom. *MFME* 1976–1977/1 (1978) 39–40.
- K. ZOFFMANN 1984 = Zs. K. ZOFFMANN: Das anthropologische Material der Kurganbestattung von Derekegyház–Ibolyásdomb (Kurgántemetkezés embertani anyaga Derekegyház–Ibolyásdombról). *MFME* 1980–1981/1 (1984) 99–109.

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