

## MOHÁCS BATTLEFIELD SURVEY – THE LESSONS LEARNED FROM THE FIRST NATIONAL ARCHAEOLOGICAL METAL DETECTING RALLY<sup>1</sup>

SZABÓ, MÁTÉ<sup>2</sup> – BERTÓK, GÁBOR<sup>3</sup> – GÁTI, CSILLA<sup>4</sup> – SZAJCSÁN, ÉVA<sup>5</sup>

*Heritage experts are debating over the use of metal detectors since its appearance.<sup>6</sup> We still cannot talk about the widespread use of such devices in archaeological field surveys in Hungary, including, unfortunately, archaeological excavations.<sup>7</sup> However, illegal metal detecting is still widespread and causes great harm to national cultural heritage in spite of recent legal changes. Hungarian archaeologists struggle to oppose this trend through individual initiatives and with the help of “museum-friendly” metal detector hobbyists. The aim of our initiative to explore the Mohács battlefield was, in addition to the anticipated professional results, to create a platform for these cooperations and to provide an opportunity to get to know each other and each other’s methods (Fig. 1).*



*Fig. 1: Using metal detectors in the wake of the Battle of Mohács. The flags indicate the findspots. (Photo: Máté Szabó)*

### METAL DETECTORS IN THE SERVICE OF ARCHAEOLOGY

The first ever metal detectorist weekend rally of Hungary was organized 19 to 21 March 2016. The battle of Mohács, coming to its 490<sup>th</sup> anniversary this year, was in the focus of the event. One of the possible locations of the battlefield was investigated with the help of metal detectorists cooperating with museums, archaeologists and archaeology students. As a follow-up to the main event, detectorists had the opportunity to take part in the survey of a Bronze Age earthwork, as well as the prehistoric settlement site and Roman villa of Cserdi, both in the vicinity of Pécs. The event was hosted by the Janus Pannonius Museum, Pécs. All of them having years-long experience in cooperating with metal detectorists, the institutional co-organizers and par-

<sup>1</sup> Translated by Gábor Bertók and András Szabó

<sup>2</sup> Department of Archaeology, University of Pécs, szabo.mate@pte.hu

<sup>3</sup> Department of Archaeology, Janus Pannonius Museum / Department of Archaeology, Pázmány Péter Catholic University, bertokgabor@yahoo.co.uk

<sup>4</sup> Department of Archaeology, Janus Pannonius Museum, gatics@gmail.com

<sup>5</sup> Government Office of Baranya County, evaszajcsan@yahoo.com

<sup>6</sup> Gregory, Tony – Rogerson, Andrew J. G.: Metal-detecting in archaeological excavation. *Antiquity Journal* 58 (1984), 179–184; Négyesi, Lajos: Fém-detektor alkalmazása: Fém-detektor alkalmazása a régészeti kutatásban (Application of metal detectors: Application of metal detectors in archaeological research). In: *A régésztechnikusok kézikönyve I* (The archaeologist technician’s handbook I). Panniculus Ser. B. No. 6, ed. Ilon, Gábor (Szombathely: Panniculus, 2002), 41–45; Krisztina Hudák: Egy államhatárokon átívelő társadalmi probléma – A régészeti célú fémkeresőzés múltja és jelene Magyarországon (A cross-border social problem – Past and present of archaeological metal detecting in Hungary). Forthcoming in *Határrendészeti Tanulmányok* (Border Police Studies).

<sup>7</sup> Even the *Régészeti kézikönyv* (Handbook of Archaeology) mentions only briefly the usage of metal detectors. Cf. Müller, Róbert (ed.): *Régészeti kézikönyv* (Budapest: Magyar Régész Szövetség, 2011).



Fig. 2: (Incomplete) group photo with participants of the metal detecting rally (Photo: Máté Szabó)

ticipants of the event were the Department of Archaeology of the University of Pécs (PTE), Pázmány Péter Catholic University's (PPKE) Department of Archaeology and ArchaeoGIS Lab, and Detect Max Hungary Ltd. The working team consisted of twenty students of archaeology from the PTE and PPKE, ten archaeologists and archaeological field technicians from the organizing institutions, and forty metal detecting hobbyists. The majority of the detectorists already had experience in cooperating with and working for various museums and research institutes. However, a smaller number of enthusiasts willing to cooperate with institutions were also allowed to participate in order to inform them about the relevant regulations and the legal ways of metal detecting (Figs. 2–3).

### THE METHODOLOGY APPLIED DURING THE SURVEY CAMPAIGN

Due to the high number of participants, and in order to achieve standardized results, we used a well-established method, which had already been successfully applied in a number of smaller-scale research projects.<sup>8</sup> After the recovery of each find, the metal detectorists put them into a sealable plastic bag and marked the findspot using a flag, leaving the find next to it. The finds were simultaneously collected by the students and archaeologists who at the same time measured the position of the findspots using either geodetic GNSS receivers or total stations. We only had to

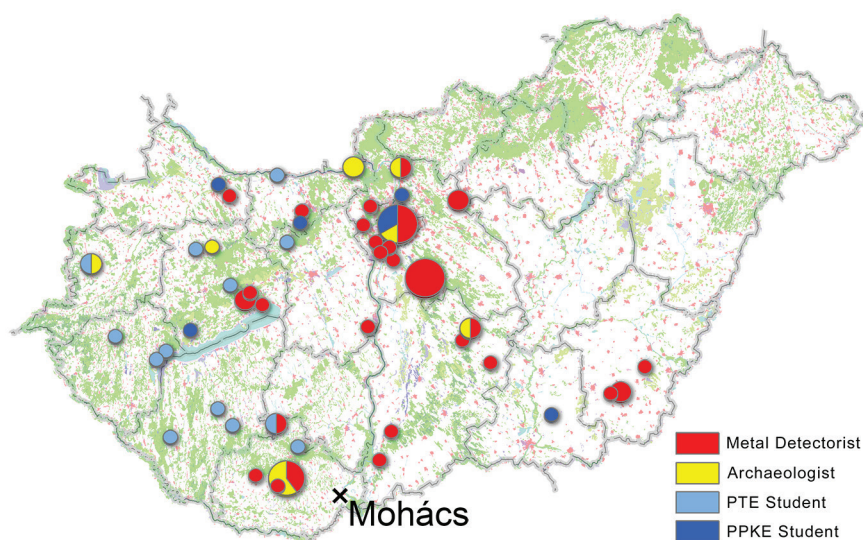


Fig. 3: Although participants came from different parts of Hungary, there is still room for improvement. (Mapped by Máté Szabó)

<sup>8</sup> The methods presented here are applied as standard procedure during the metal detector assisted archaeological field surveys conducted by the University of Pécs and the Aerial Archaeological Archives of Pécs.



Fig. 4: Marking and measuring methods used in the research (Photos: Máté Szabó)

deviate from this method in the case of the Bronze Age hillfort where we could only use the GNSS receivers as the forest covering the site have severely hindered horizontal visibility. In this case we had to put up with a reduced accuracy, but it was still much better than what could have been achieved by using a simple navigation GPS. Of course, in case of an exceptional find assemblage we would have arranged for coordinates of geodetic accuracy. In addition to the code denoting the coordinate of the find, each metal detectorist put his/her personal identifier on the tag associated with the find, so that we could add the name of the finder to the museum's records, so that it can be cited in publications and exhibitions. We also tried to track the detectorists, but only if they volunteered to do so with their own track recorder, if their GPS device had one. Therefore, the information collected this way can only be regarded as a sample of all the tracks as opposed to the tracklogs of fieldwalking and metal detector surveys done during a regular survey by archaeologists.

The metal detectorists were free to dig for the finds as deep as the depth of ploughing. Digging for anything deeper was a matter of consideration in each individual case. In the case of the Vasas hillfort, digging was handled with extreme caution, since the site is excluded from agricultural cultivation, and even the slightest over-digging could have damaged intact archaeological features (*Fig. 4*).

Though we had originally intended to record the depth of certain concentration of finds, we had to forfeit this plan, as the uneven, undulated surface caused by ploughing rendered this statistical data irrelevant. There was only a single find assemblage found below ploughing depth, detected during the Monday facultative programme aimed at surveying the Cserdi Roman villa. We opened a small trench in order to recover this assemblage, and implemented thorough archaeological documentation (e.g. image-based 3D documentation) before removing the finds. This will allow us to continue the excavation of the whole archaeological feature at a later date.

## SURVEYING THE POSSIBLE LOCATION OF THE 1526 BATTLE OF MOHÁCS

A flat area with the remains of a late medieval settlement was chosen as the site of our survey project. Lying east of the village of Majs, the site is suspected to be part of the 1526 battlefield and has been subjected to various non-invasive archaeological prospecting methods in the last decade.

There are several contemporary literary sources – even those of participants – that describe the Battle of Mohács. However, each eyewitness reports the affair from his point of view, therefore no clear summary of the series of events taking place during the battle is given. This is probably why each historian and archaeologist interpreting the literary and archaeological evidence has drawn a different map of the initial battle formations and manoeuvres.<sup>9</sup>

<sup>9</sup> B. Szabó, János (ed.): *Mohács* (Budapest: Osiris, 2006), 239–350, with a list of the most important works published before 2006.

Therefore, it seemed obvious to employ the methods of battlefield archaeology as well. Collecting and accurately mapping the finds and features associable with the battle may shed light on defensive lines, firing positions, and the locations where various troops fought each other, etc.

The surveyed area, including the site located at the foothills bordering Majs from the east, stretching ENE–WSW and yielding late medieval finds, was first pointed out by the local historian Béla Kiss in his 1978 study.<sup>10</sup> According to his opinion, this site could be the location of the remains of the village called Földvár, which is mentioned in the account of King Louis II's chancellor István Brodaries, who was a participant and eyewitness in the battle:

*“As has already been said, this location is a large plain, without forests or shrubs, bodies of water or hills, with only a marshy area to its left filled with sedges and reeds, where many later perished. Across from us a hill stretched a long way, almost like a stage, and behind this was the sultan's camp. At the bottom of the hill was the small village of Földvár with a church. This is where the enemy situated their cannons. Later, toward the end of the struggle, we saw with our own eyes that this location was filled with enemy soldiers, largely consisting of those known as janissaries. Whatever space there was behind the village's shacks, they filled with long lines. It became known later that the sultan was also there with them. The cannons were situated as if they were in some type of valley, and for this reason they were less effective than if they had been on the plain, causing more fear than inflicting real damage.”<sup>11</sup>*

Having examined the literary sources and mapped the surface finds, Lajos Négyesi<sup>12</sup> came to the same conclusion—i.e. that the Majs site could be Földvár—in the early 1990s independently from the observations made by Béla Kiss.<sup>13</sup>

The authors of this paper at the Janus Pannonius Museum and colleagues at the Museum of Military History (Lajos Négyesi, Balázs Polgár) have been conducting research into the area and vicinity of the site since 2009 on several occasions. Numerous medieval artifacts have been recovered, including many attesting the presence of military. Magnetic and aerial archaeological surveys have also clarified the structure of the medieval village.<sup>14</sup>



Fig. 5: Artifact pattern of the two main research areas clearly indicating the SSW-ENE trace of the mediaeval village in the upper part of the map (Mapped by Gábor Bertók)

<sup>10</sup> Kiss, Béla: *A mohácsi csata. Legújabb kutatások* (The Battle of Mohács. Recent research) (Mohács: [Pécsi Szikra Nyomda], 1978)

<sup>11</sup> Brodaries, István: [Igaz leírás a magyaroknak a törökökkel Mohácsnál vívott csatájáról](#) (True description of the battle fought by the Hungarians against the Turks at Mohács) (Last accessed 31.05.2016.)

<sup>12</sup> Former head of the Battlefield Archaeology Department at the Institute and Museum of Military History of the Hungarian Ministry of Defense

<sup>13</sup> Négyesi, Lajos: A mohácsi csata (The Battle of Mohács). In: Bona, Gábor (ed.): *Hadtörténelmi Közlemények* (Military History) 107 (1994)/4, 62–79.

<sup>14</sup> Bertók, Gábor – Polgár, Balázs: A mohácsi csatatér és a középkori Földvár falu régészeti kutatása (Archaeological research of the Mohács battlefield and the medieval village Földvár). *Hadtörténelmi Közlemények* (Military History) 124 (2011)/3, 919–928; Bertók, Gábor – Gáti, Csilla: *Régi idők – új módszerek* (Old times – New methods) (Budapest–Pécs: Archaeolingua, 2014), 160–170.

The aim of our research was to survey the largest possible area around the village, the area south of it, supposedly occupied by the Ottoman troops, to map all the collected finds accurately, and to compare all our results with the already available data. During the analysis the most important finds have been various projectiles, weapons, and personal military equipment (e.g. spurs, horseshoes, bullet moulds) that may indicate the presence or movement of contingents and units (Fig. 5).

The team was provided accommodation by the courtesy of the municipality of Majs, just a walking distance away from the designated research area. In compliance with the landowners, possessing all the necessary permissions, we could start our work after a short briefing in a 50 ha large area.

All the detectorists started with ten marking flags each, which was returned to them during the progress of collecting the finds by the find-collecting survey teams composed mostly of students. The ploughed, open area was covered by sprouting crops, but it soon became evident that the detectorists with varying experience and with various speed and equipment can fast become scattered. The initial difficulties were quickly solved by the re-organized detectorist teams and the continuous collecting/measuring of the finds. This was secured by the division of the research area between five GNSS receiver or total station operating at the same time and by the cooperation of collecting/measuring teams of two-three people. The constantly growing number of finds were continuously transported by car to the headquarters for sorting and preliminary assessment, and at the same time, the disposable equipment (e.g. plastic bags) was refilled at the research field. Thus, the uninterrupted work was achieved by the teamwork of 40 metal detectorists (meaning approx. 400 marking flags at the beginning) and 20 helpers.

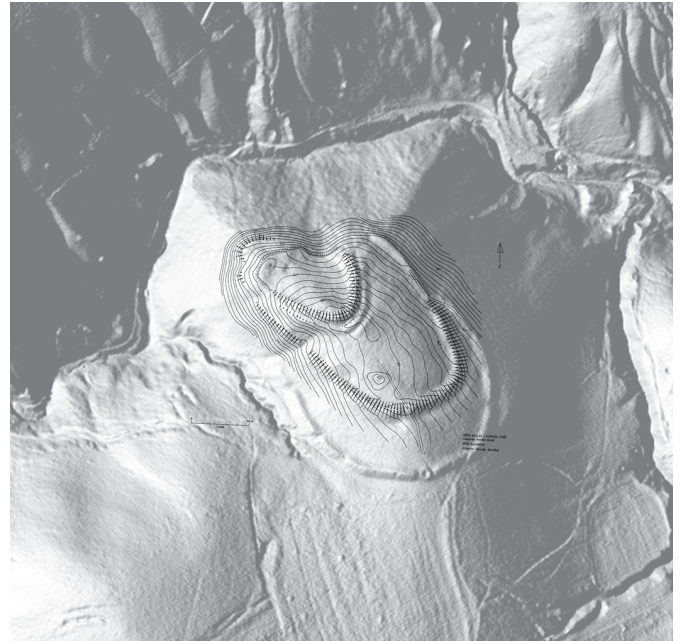


Fig. 6: Gyula Nováki's survey map with LiDAR data from 2002 (Bertók, Gábor – Gáti, Csilla: *Őskori földvár a Mecsekben. Pécs-Vasas, Kopasz Óvár* [Prehistoric earthwork in the Mecsek. Pécs-Vasas, Kopasz Óvár]. In: Kósa, Pál [ed.]: *Várak, Kastélyok, Templomok. Évkönyv* [Castles, palaces and churches. Yearbook] [Pécs: Talma Kiadó, 2015], 66–67).

## UNEARTHING THE BRONZE AGE WITH METAL DETECTOR

After concluding the one and a half days of battlefield archaeology, those who have volunteered for the optional follow-up event could continue the metal detecting at a hillfort near Pécs. The prehistoric hillfort at Pécs-Vasas had been discovered and surveyed by Gyula Nováki.<sup>15</sup> The site is also visible on the winter satellite images of Google Earth. The LiDAR survey conducted in 2015 has significantly changed the earlier image of the hillfort<sup>16</sup> but we had no information about the age of the defensive structures.

The methods specified for the weekend needed some change, as the woodland terrain rendered the metal detecting, the following of the detectorists, the measuring of the findspots, and the collection of the unearthed artifacts difficult. The excavation of all finds had to be executed very carefully in every case, as the archaeological features of the site had only been disturbed previously by the forestry, therefore we aimed to preserve these features as intact as possible.

<sup>15</sup> Nováki, Gyula: Pécs, Vasas, Kopasz Óvár. In: *Régészeti kutatások Magyarországon 2002* (Archaeological research in Hungary in 2002). (Budapest: KÖH–MNM, 2004), 255–256.

<sup>16</sup> Bertók, Gábor – Gáti, Csilla: *Őskori földvár a Mecsekben (Pécs-Vasas, Kopasz Óvár)* (Prehistoric earthwork in the Mecsek [Pécs-Vasas, Kopasz Óvár]. In: Kósa, Pál (ed.): *Várak, Kastélyok, Templomok. Évkönyv* (Castles, palaces and churches. Yearbook) (Pécs: Talma Kiadó, 2015), 66–67.



Fig. 7: The finder, Gábor Szijjártó with the excavated iron tools. Interestingly, the tools used for mining were found by a metal detectorist working as a stonemason.  
(Photo: Máté Szabó)

Little number of interpretable finds were recovered. Among the few items that could be defined, we identified some fragments belonging to bronze swords or axes, and a spearhead, suggesting that the hillfort was used during the late Bronze Age, at latest. Some iron artifacts (forged nails, fire striker, cowbell) imply that the area was also used during the medieval period (Fig. 6).

### ANOTHER DAY OF METAL DETECTING AT THE ROMAN VILLA OF CSERDI

The most tenacious group of metal detectorists had the opportunity to continue their work at the pre-historic and Roman settlement near Cserdi, Baranya County. Such research was not unknown on the larger part of the site; since the aerial archaeological discovery of the Roman villa here,<sup>17</sup> it has been mainly surveyed by non-invasive or less invasive methods.<sup>18</sup> Besides one small-scale probing excavation in 2012,<sup>19</sup> we have mainly conducted metal detector assisted field surveys, but a find assemblage also entailed another smaller excavation in 2014.<sup>20</sup>

The results of several years of persistent research was well reflected on the last day of the rally. The site yielded significantly less finds than experienced before, but we can still consider the metal detector survey a success. The methods for the collection, excavation, and measurement of the finds were based on the same principles as implemented throughout the rest of the weekend. Most of the finds were discovered in the ploughing level, near the surface, in accordance with our earlier experiences,<sup>21</sup> but in one case an iron tool depot was detected starting from the bottom of the ploughing level and reaching into an intact layer. In order to document this find accurately, we opened a smaller trench and with the least possible disturbance of the layers, we could recover the depot find, whose analysis is in progress (Figs 7–8).

<sup>17</sup> Szabó, Máté: Baranya megyei villák légifelvételeken (Roman villas in Baranya County from the air). *Janus Pannonius Múzeum Évkönyve* (Yearbook of the Janus Pannonius Museum) (2015), 87–114.

<sup>18</sup> Szabó, Máté: Using remote sensing and non-invasive archaeological methods in the research of Roman villas and the ancient landscape of Pannonia. In: Czajlik, Zoltán – Bődöcs, András (eds), *Aerial Archaeology and Remote Sensing from the Baltic to the Adriatic* (Budapest: L'Harmattan, 2013), 79–84.

<sup>19</sup> Szabó, Máté – Kiss, Alexandra – Molnár, Róbert – Nagy, Balázs – Neményi, Réka – Szabó, András – Takács, Péter N. – Talabér, Ildikó: Előzetes jelentés a Cserdi község (Baranya megye) melletti római villagazdaság 2012. évi próbafeltárásáról és terepi kutatásáról. (Roman villa at Cserdi (Baranya County) – A preliminary report on archaeological investigations conducted in 2012). In: Balázs, Péter (ed.), *FIRKÁK III* (Szombathely, 2014), 255–304.

<sup>20</sup> Szabó, Máté: Római kori villakutatás kis lépésekben. In: Kósa, Pál (ed.): *Várak, Kastélyok, Templomok*. Évkönyv (Castles, palaces and churches. Yearbook) (Pécs: Talma Kiadó, 2015), 34–37.

<sup>21</sup> Szabó, Máté – Kiss, Alexandra – Molnár, Róbert – Nagy, Balázs – Neményi, Réka – Szabó, András – Takács, Péter N. – Talabér, Ildikó: Előzetes jelentés a Cserdi község (Baranya megye) melletti római villagazdaság 2012. évi próbafeltárásáról és terepi kutatásáról. (Roman villa at Cserdi (Baranya County) – A preliminary report on archaeological investigations conducted in 2012). In: Balázs, Péter (ed.), *FIRKÁK III*. (Szombathely, 2014), 269.

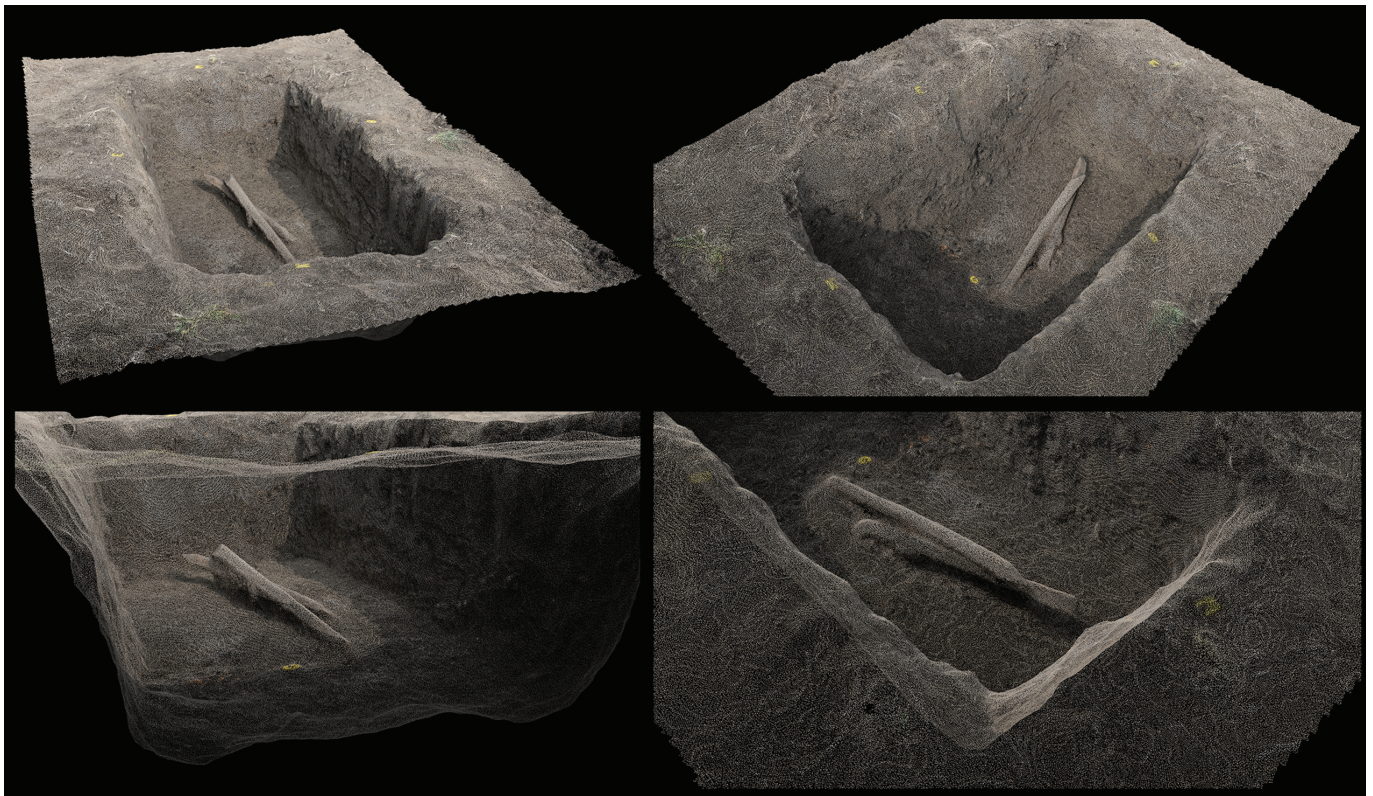


Fig. 8: Dense point cloud images generated by the photo 3D model of the excavated iron tool depot (Processed by Máté Szabó)

## LESSONS LEARNED

The views formed about metal detectors are differing both inside and outside archaeology, also influenced by the frequently changing legislation on their usage. The previous regulation allowed the abuse of metal detectors through many loopholes, while the new regulation<sup>22</sup> eases their utilization for archaeologists, but enforces a mandatory license for everyone else who aims to use them. The heritage protection authorities lack any effective means to combat illegal metal detecting, and without specific concepts the strict legislation is not enough to deal with the existing situation.

The solution of this problem is crucial to archaeology, as practically the cultural heritage is to be protected after the last moment against illegal metal detecting, agricultural cultivation, and other destructive effects, but within a professional framework and with presenting the scientific results. Those metal detector hobbyists who are ready to learn and accept the principles of archaeological field work and are willing to work together with museums and institutes could be partners in this solution. Knowing some negative and positive examples, it is still a question if our museums are willing to cooperate with and accept the help of these metal detectorists, and if they are able to educate them and continuously keep them occupied.

We think that our goals were at least partly successful by bringing together a group of „museum-friendly” metal detector hobbyists. The significant number of participants, the methods that could be developed into a standard process, and the willingness to cooperate were all important steps towards an organized unity, and we hope that we could call attention to the fact that there is a way to bring together archaeologists and metal detector hobbyists willing to cooperate. Furthermore, we hope that the rally will eventually become larger and other institutes will recognize the necessity to deal with the problem and perhaps undertake the task to organize similar rallies or take steps to form a professional cooperation.

<sup>22</sup> Government Decree 39/2015 (III. 11.) regarding the protection of archaeological heritage and monuments.

Szabó, Máté et al. • Mohács battlefield survey

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## RECOMMENDED LITERATURE

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