

Locating the battle of Byczyna (1588)

First archaeological survey

Lech Marek – Mirosław Furmanek

Abstract: *The battle of Byczyna fought in 1588 ended the struggle for the Polish crown between Archduke Maximilian III Habsburg and Sigismund III Vasa. Maximilian suffered a devastating defeat inflicted on him by the forces of the Great Polish Chancellor Jan Zamoyski during a quick and extremely bloody battle. The paper presents the results of the preliminary archaeological survey on the hypothetical battlefield site by the research team from the Institute of Archaeology, University of Wrocław. It involved metal detecting, the mapping of finds, remote sensing and geophysical methods used to analyze characteristic terrain features which could be related to the battle. The area under investigation is located on the grounds of Roszkowice village, plots Nos 7, 9/2 and 9/8. 172,175/2. Special attention was paid to plot No. 9/2 in the area of the planned S11 Byczyna beltway. One of the objectives was the verification of local toponymy – such places as Puddle of Blood, Bloody Hill (Hill of Death) or Little Hell with their names originating from the common memory of the battle events.*

Key Words: Byczyna – Pitschen – 1588 – battlefield – firearms

According to the scholarly opinion, the battle of Byczyna fought in 1588 was one of the most important events in the political and military history of Poland. It ended the struggle for the Polish crown between Archduke Maximilian III Habsburg and Sigismund III Vasa. Maximilian suffered a devastating defeat inflicted on him by the forces of Vasa's supporters led by the Great Polish Chancellor Jan Zamoyski during a quick and extremely bloody battle. In the light of the written sources, the precise location of the battlefield and the exact sequence of events are still a matter of dispute. It seems that the discussion led historians to a stalemate and only archaeological methods may open up new avenues for further inquiry into the subject just as the case of other thoroughly investigated battlefields in the territory of Poland. Despite the historical importance of the event, the 2020 archaeological survey was the first one ever done on the site. It involved remote sensing and geophysical methods used to analyze characteristic terrain features which could be related to the battle. The area under investigation is located on the grounds of Roszkowice village, plots Nos 7, 9/2 and 9/8. 172,175/2 (Fig. 1). Special attention was paid to plot No. 9/2 in the area of the planned S11 Byczyna beltway. One of the important objectives of our investigations was the verification of local toponymy – such places as Puddle of Blood, Bloody Hill (Hill of Death) or Little Hell with their names originating from the common memory of the battle events.

The research project was financed by the Opole voivodeship office for the protection of monuments and conducted by the research team from the Institute of Archeology, University of Wrocław (Mirosław Furmanek PhD (archeologist, leader of the research team), dr. hab. Lech Marek (archeologist, student of arms and armour), Łukasz Melski MA (archeologist, metal detector survey specialist), Iwona Feier MA (PhD student), Marek Grześkowiak MA (PhD student), Artur Rapiński MA (archeologist), Mariusz Kubacki (volunteer), Adam Zbroiński (volunteer), Mateusz Jackowski MA (Wrocław University of Science and Technology), and students of archeology (University of Wrocław – second year of Bachelor studies)

Location and the course of battle. Written sources.

Written accounts on the battle of Byczyna were the subject of thorough investigations undertaken by historians since the 19th century at least. According to the common view, on 24 January 1588, the army of Archduke was positioned east of the city. On the basis of fairly numerous records, different battle scenarios have been reconstructed to date (f.e. Bandtke 1821; Górski 1888; Glauer 1928; Wimmer 1955; Plewczyński 1971; 1994; Boras 1988; Kaczorowski 1988; Herman 1992; Dzieszyński 2017; Kasprowska et al. 2017; Orłowski 2014).

The battle of Byczyna was the final conclusion of the conflict for succession after the death of King Stephen Báthory (12.12.1586 r.). The courtiers of the latter supporting Sigismund III Vasa formed a party under the leadership of the Great Polish Chancellor Jan Zamoyski, his adversaries mainly from the Zborowski magnate family backed Maximilian III, Archduke of Austria. The race for the Polish crown ended with the bloody battle of Byczyna, the humiliation of the Archduke, and giving up claims to the Polish throne by the Habsburgs.

The unsuccessful raid of Maximilian on Cracow and his subsequent retreat towards Silesia caused several lesser and greater military actions and skirmishes between the two adversaries (f. e. near Danków). The army of Jan Zamoyski advanced after him and decided to cross the borders of the Holy German Empire in a pursuit that ended at the walls of Byczyna.

The main battle was preceded by several small scale clashes – and among them the well-known skirmish near Uszyce. Maximilian's army was positioned East of the city near the so-called Royal Highway leading to Byczyna from Roszkowice and Uszyce villages. The army of Jan Zamoyski surprised their opponents by attacking their left flank instead of advancing on them directly along the highway and engaging their centre. This was possible when an unmanned dike crossing over the Prosna River had been spotted and afterwards used successfully by Zamoyski's light cavalry avantgarde. This way Zamoyski arrived unexpectedly from the northwestern direction. Maximilian hoped to encircle his adversaries after they attacked his central ranks. The initial stage of battle began on the left flank of the Habsburg army. It involved light cavalry and the winged hussars. Maximilian supported the attacked wing by moving his central ranks left. This in turn opened an opportunity for Zamoyski to win advantage over the weakened centre of the Habsburg army. In the area, the intense firefights raged on between infantry supported by Reiters and arquebusiers. The attempt of Maximilian to withdraw his troops from the left wing and support again the centre was stopped by the charge of Polish winged hussars, which eventually defeated the Habsburg army.

Despite numerous descriptions of local topography, it is difficult to locate the battlefield according to the analysis of written sources. The latter is also inconsistent in giving the numbers of the troops involved and the number of casualties. According to a common view among historians, Maximilian had 5000 troops at his disposal and Zamoyski led a force of 6000 men. The main stage of the battle lasted only about 1–1,5 hours. It is believed that during this time about 3000–5000 men were killed.

Hypotheses on the location of the battlefield are two. Some historians, especially Polish researchers, locate the battlefield between hill No. 218 in the West, Roszkowice village in the South and Sierosławice village in the East. Hill No. 218 is believed to be the place from where the Archduke commanded his troops. Other historians believe that the main battle had taken place closer to Byczyna between the so-called Cross-hill and an unnamed watercourse at the foot of hill No. 218 in the East.

Among the most important pieces of information for locating the battlefield are the following:

- the crossing of the Prosna River valley by Zamoyski's army through the so-called Royal Dike crossing (see Orłowski 2014),
- the battle had taken place on a plane
- Maximilian's army was arranged in an arch-shaped formation facing the direction from which the adversary was expected

- the army of the Great Chancellor had to get around a large hill before engaging the enemy on a plain.
- Maksymilian's force awaiting the enemy was disoriented and positioned in the valley whereas Zamoyski's troops taking advantage of the terrain features manned all of the neighbouring hills.
- the battle lasted a „good hour” during which there was a fierce firefight. As result, both camps became covered by thick black clouds of gunpowder smoke.

Important information can be learned from traditional local toponymy – such places as Puddle of Blood, Bloody Hill (Hill of Death) or Little Hell with their names originating from the memory of the battle events.

Methods

The main objective of the archaeological survey in 2020 was the attempt at locating the battle of Byczyna. It was based on non-invasive or nearly non-invasive methods. Remote sensing and geophysical surveying were used to reconstruct landscape changes and the identification of traces of human activity from before, during and shortly after the battle (f. e. such as the location of mass graves related to the battle). Data from archival aerial photography and satellite imagery was used in an attempt to identify crop- and soil marks that could indicate archaeological and landscape features, such as watercourses and roads. Meticulous observations were done in the area of 4,5 square kilometres where the location of the battlefield was suggested. The analysis of satellite images provided by the Polish Main Office of Geodesy and Cartography and Google Earth resulted in recording indices of unusual features and among them especially crop-marks (Fig. 2). Additional data was collected during UAV aerial photography surveys. For this purpose, we used DJI Phantom 4 UAV. The aerial photos were analysed and utilised for orthophoto maps. Terrain models generated from ALS data were integrated with spatial information gained during our fieldwork. Their special value lies in that they are very useful to reconstruct the changes of the natural and cultural landscape of the battlefield area. ALS data was obtained from the ISOK program database. This is a computer system created by the Polish Main Office of Geodesy and Cartography and other cooperating institutions to secure the country in case of extraordinary threats, especially floods. In the case of the surveyed area, the ALS data was recorded on 03.10.2012 r. The accuracy of the measurements is four per square meter with a possible height distortion of up to 15 cm.

A geomagnetic survey near Roszkowice was done with the push-cart magnetometer system Sensys MXPDA with five sensor channels. The distance between sensors was 50 cm and measurements were taken every 5 cm. The device was equipped with a Stonex S10 GPS RTK system, which enabled us to locate precisely each measurement point on the map. The described configuration of the magnetometer allowed us to obtain optimal measurement accuracy. The analysis of the distribution of changes in the magnetic field was done with TerraSurveyor, v. 3.0.28.1 software produced by DW Consulting Company. The geomagnetic survey was performed in areas where we had earlier identified soil and crop marks suggesting the existence of underground structures – allegedly mass graves (Fig. 3).

The basic method used to identify relics of the battle was the metal detector surface survey in agricultural plots No. 9/2, 9/8, 7, 172 and 175/2, an area covered by a grid divided into square 50 x 50 m units. The latter were systematically searched for battle-related artefacts. Each archaeological find was precisely located with the use of a GPS RTK (Stonex S10 and HiTarget) device and pinpointed on the map. Meticulous prospection that covered the area of 9,45 ha enabled us to precisely analyze the distribution of finds and make an attempt to interpret the value of the collected archaeological evidence (Fig. 4). Archaeological, historical, remote sensing and geophysical data were integrated within the GIS, which facilitated precise spatial analysis and modelling.

Results

Analysis of ALS data recorded several linear structures marked with slight differences in relief which could be interpreted as former roads (Fig. 1; 6). One of them forms an arch that runs from North-East to South-East and may be identified as a clear borderline between the present agricultural plots Nos 9/2 and 9/8. It is also marked on maps from the 1st half of the 20th century. Previously it divided two areas of different economic purposes, but also of dissimilar landscape and perhaps of diverse environmental conditions as well. To the west of the road arable land was divided into fields according to the East-West direction. This zone most probably was used for agriculture in the Middle Ages and still in the time of the battle. East of the road there is a lack of similar divisions which suggests that the area must have been used here in a different way. It is difficult to ascertain whether it was originally covered by meadows or woods at the end of the 16th century. Non obliterated edges of the watercourse valley running between hill No 218 and the mentioned road suggest that there must have been some trees growing in the area, that slowed down erosion processes. A distinct edge is especially well visible in this case between the place called the *Pool of Blood* and hamlet *Korea*.

The existence of ponds along the mentioned watercourse cannot be excluded (Fig. 6). Related to them are probably relics of two dike crossings. One of them is located North of hill No 218 over which a dirt road is running from Roszkowice to hamlet *Korea*.

The relics of another road running East-West, are recognizable in ALS visualisations, as well as aerial photographs and satellite imagery. It branches off the former main highway to Roszkowice village in the area of the Cross Hill and runs to a road forming the Southern border of the Roszkowice settlement (Fig. 1; 6).

The chronology of the two inexistent roads is a matter of dispute, but it seems they might have been established already in the middle ages and remained still in use at the end of the 16th century. If this assumption is correct, they were important infrastructural elements and landscape features that had an impact on the sequence of events related to the battle. The second it might also be noted appears in historical works as the hypothetical line North of which Maximillian's army awaited the enemy (f.e. Glauer 1928).

The visualisations of ALS of the area extending from the forest-covered top of hill No 218 (local name Hill of Death, Hill of Blood) to the community gardens delivered no suggestions on the location of battle-related mass graves.

Interesting and requiring investigation is the existence of rectangular-shaped crop marks visible in aerial photography and satellite imagery. Regarding their form and dimensions, they could be interpreted as grave-pits (Fig. 2; 3). On the other hand, they could be also related to settlement structures predating or postdating the battle events.

The UAV surveys brought to light other crop marks related rather to geological structures than human activity. Discovery was the observation of zigzag lines north of the community gardens most probably relics of 20th-century military trenches.

The geomagnetic survey was done in agricultural plots Nos 9/2 and 172. In the limits of the former, 1,9 ha was investigated in the vicinity of the community gardens in the area of the planned beltway and in the north where crop marks had been spotted. In one of the latter forming a rectangle 14 x 16 m, there were no magnetic distortions recorded, which could suggest it is an archaeological feature. On the other hand, we cannot exclude the possibility that its fill has too weak a geomagnetic anomaly signal to be recorded by the utilised device (Fig. 3). Further to the north where small-sized rectangular crop marks had been recognized we recorded anomalies. Unfortunately, it turned out, the latter do not conform regarding their dimensions and shape to the former. Additionally, these anomalies form part of larger structures, probably of geological origin. Their proper identification requires further research.

Agricultural plot No 172 was also surveyed using the same method. The investigations covered an area of 0,5 ha. The main objective of the prospection was to locate potential grave pits in this sector.

The verification was negative in this case. No archaeological features had been recorded. Instead, the common dipolar anomalies are signals characteristic of stones and buried metal objects.

Archaeological survey with the use of metal detectors covered the area of 9,45 ha and yielded 1070 artefacts, most of which couldn't be unquestionably related to the battle. The collection consists of numerous coins, leaden cloth seals, buttons, spent cases from rifle and pistol rounds, unidentified copper alloy and iron artefacts. Most of the objects are unrelated to the battle of 1588, and much later. Nevertheless, they still represent valuable evidence documenting the material culture of Byczyna in several centuries.

While analyzing the distribution of finds it is of interest to note that the most numerous, such as coins, horseshoes, buttons and cloth seals were predominantly recorded in agricultural plot No. 9/2 along the road from Byczyna to Roszkowice. (Fig. 4). It might be assumed, they had been frequently re-deposited and may reflect agricultural activity or communication along the road. This observation may be confirmed by archival maps on which we find a now extinct road that used to run between the present plots Nos 9/2 and 9/8. A different type of evidence are cases from military rounds. Most of them recorded in clearly defined concentrations mark firing positions from WW2.

According to strict criteria, a selection of 46 leaden shots and two low-budget buttons in chronological accordance with the battle of 1588 was made (Fig. 5). Based on their overall features they could be dated to the latter half of the 16th and the 1st half of the 17th century. The buttons manufactured of lead and iron wire are parallel to those found with a fallen infantryman from 1628 excavated in Stralsund in the fill of the approach trench next to the Frankenkrone Bastion (Konze, M., Samariter, R. 2014, pp. 209–210, Fig. 22). The shots represent small-bore projectiles meant for cavalry weapons manufactured at the turn of the 16th and 17th centuries. The interpretation of such projectiles in concentrations as evidence for cavalry involvement has been already made by archaeologists investigating other battlefield sites such as Alerheim in Bavaria (1645) (see Misterek K., Lutz A. 2014, pp. 325–326). This point of view concerning the battle of Byczyna may correlate to the written sources, which confirm the leading and decisive role of cavalry during the hostilities. Among the selected leaden shots only 5 may be interpreted as belonging to heavy infantry weapons used at the turn of the 16th and 17th centuries. The lowest calibre limit for such projectiles was established according to the literature at the value of 14 mm. We cannot however treat this as a rigid classification criterion. The remaining 41 shots represent calibres ranging from 10 up to nearly 14 mm common among light arquebus and pistols used by cavalrymen at the end of the 16th century (Krenn 1990, s. 16). Among other pieces of evidence possibly related to the battle, striking in appearance are three leaden shots which are hexagonal in cross-section (Fig. 7: 11). Two of them represent 10 mm whereas one is 11 mm calibre. On their surface, one can see traces of casting such as seams and sprues. All of them bear marks confirming they had been shot from barrels of hexagonal rifling. Experiments with rifling date back at least to the 16th century (Hayward 1955, s. 8), although due to the expense, labour and skill it required, never had gained great popularity until the 19th century. Sometimes bores in early rifled barrels apart from hexagonal, were also star-shaped, trefoil, triangular, square or even heart-shaped in cross-section. There is a hypothesis that such weapons were manufactured for the advertisement of gunmakers' skills or represent the result of unsuccessful experiments with optimal bore shapes (see Żygulski 1975, pp. 162–163; Geibig 2005, p. 187, Fig. 265–270). The latter opinion fails to explain, however, why such an experimental phase should have lasted so long – well until the 18th century at least (compare Geibig 2005, pp. 36–38, 187). Most plausibly firearms equipped with barrels of peculiarly shaped bores may be treated as luxury products that testified to the highest skill of their makers and extravagant taste of their owners. There is no surprise that such weapons also found their way into the armouries of the royal families. The early 17th-century wheel lock gun which belonged to the French King, currently kept in Musée de L'Armée is a good example (Reverseau 2004, s. 36–38). Such elite weapons were used at the time for sporting, hunting and occasionally also by marksmen in battle. In Polish diaries from military campaigns of the 17th century, there is mention of the use of *ptaszyńka* a weapon meant for bird hunting and *guldynka* a rifled hunting weapon against

adversaries. On the other hand, caution is always needed when referring to names, which appear in contemporary written accounts (see Niemcewicz (ed.) 1840, p. 81)

The full potential of the collection can be revealed by specialist analyses. Even superficial observations of the shots seem to be rewarding however and suggest that some of them must have been shot out of barrels. Impressions of the bore marks left by ramrods, and traces of impact are particularly characteristic in this case. Another group of marks is related to the manufacturing process. It predominantly consists of casting seams and sprues, the latter being filed off in some cases. Most probably they were left by two-part iron small moulds for lead shots

To summarize the observations on the collected shots we can conclude that relation of these finds to the battle events is suggested based on their small calibre – characteristic of cavalry weapons, of their form, of marks which testify they had been shot out of firearms, not dropped accidentally and of the distribution of finds with their concentration in the hypothetical location of the battlefield. At this preliminary stage of investigations, we need caution though, remembering that analogous shots might have been used well after the battle events.

The distribution map shows, that there is a concentration of shot finds (Fig. 4; 6). between the so-called *Hell* and the present community gardens. This conforms to the hypothetical battle array of Maximilian's army presented by the German historian O.F. Glauer in 1928. The rest was recorded on plots Nos 9/2 i 9/8 where at least a battle-related episode might have taken place. Strikingly scarce finds in the area of hill No 218 so far suggests it wasn't a scene of intensive fighting what had been previously assumed based on written accounts. It doesn't rule out the possibility however that Zamoyski's commanding position was located there as some authors hypothesize.

The research done so far seems to validate the eastern location of the battlefield between Cross Hill and Hill No. 218. It is difficult however to refute the hypothesis on the western location because this area hasn't been archaeologically surveyed yet.

Conclusions

Based on the preliminary archaeological prospection we can conclude that (Fig. 6):

- most probably the battle of 1588 had taken place between the cross Hill and Hill No 218.
- according to the present state of research between *Little Hell*, the watercourse and the *Hill of Death* (No. 218) there was no evidence of intense fighting during the battle of Byczyna. Perhaps further investigations in this area may change this view.
- the verification of common hypotheses on the location of the battlefield east of the *Hill of Death* requires a large scale archaeological survey north of Roszkowice village.
- In the light of the collected evidence it is probable that at least a phase of battle had taken place in the area of the planned S11 Byczyna beltway.
- It is essential to increase our knowledge on the range of the battlefield, the sequence of events in 1588 and the positions of the fighting armies based on further archaeological investigations. This is also crucial for securing the archaeological evidence constantly threatened by the activity of treasure trove hunters on the site

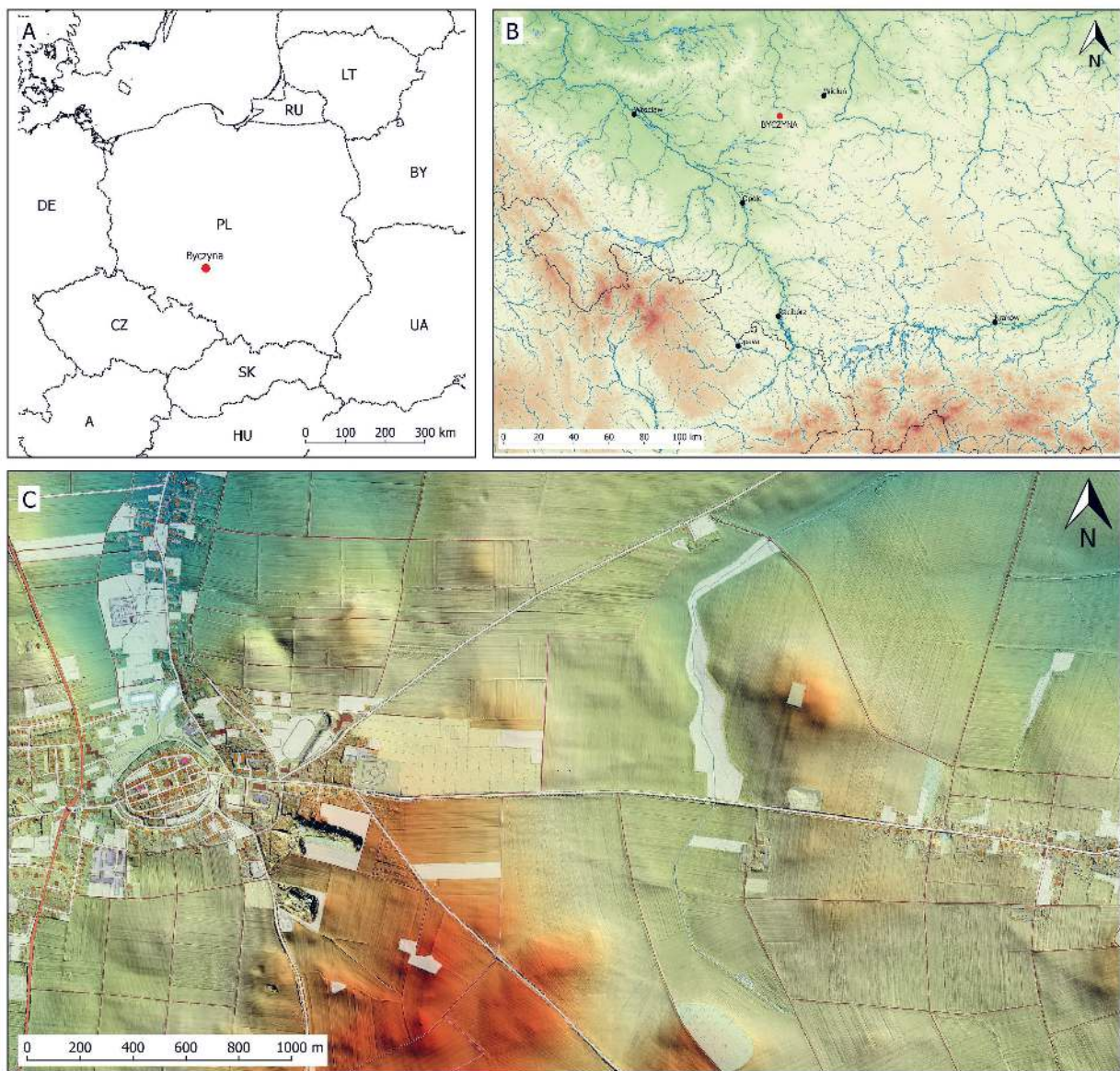
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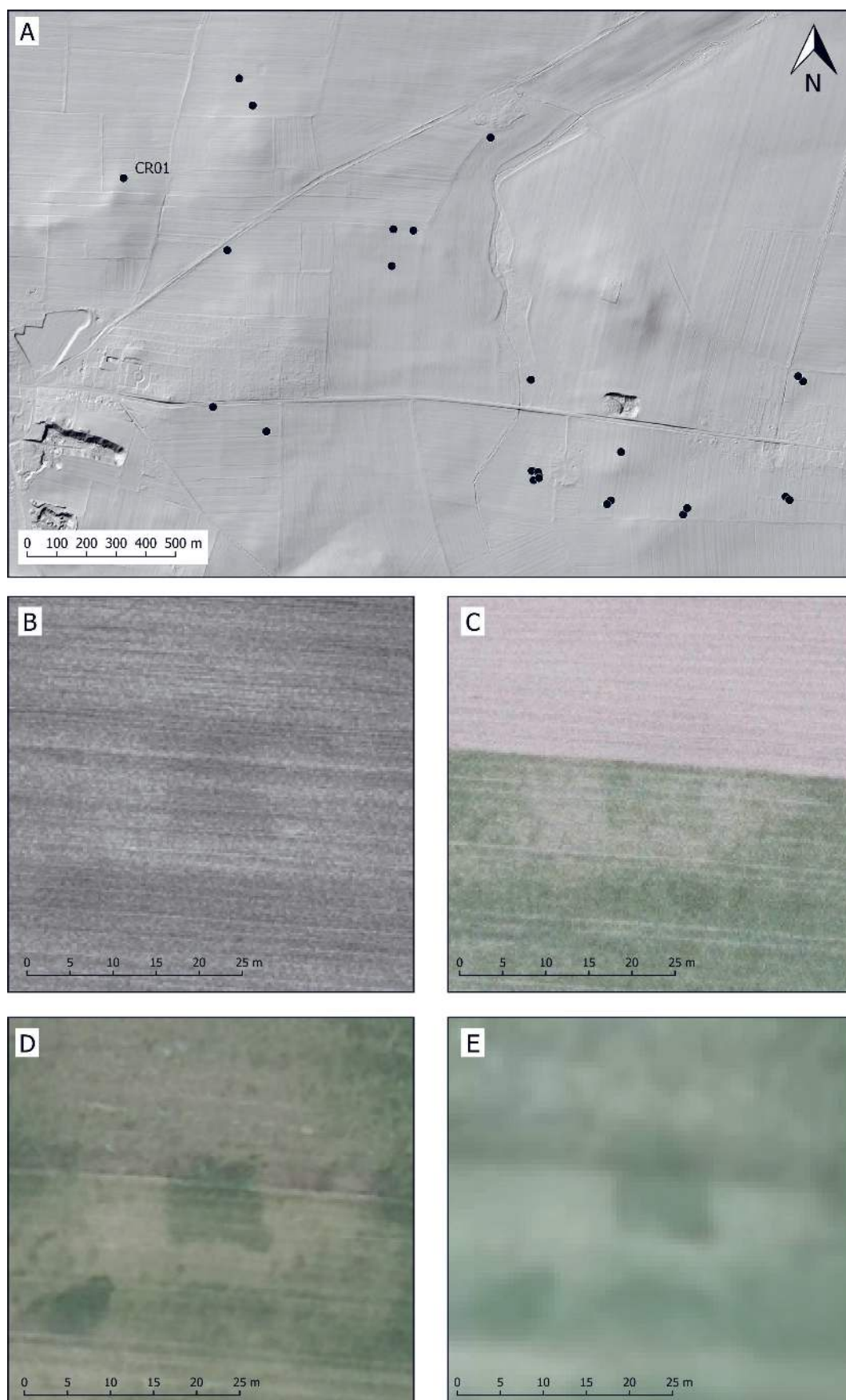
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Lech Marek
Institute of Archaeology
University of Wrocław
lech.marek@uwr.edu.pl

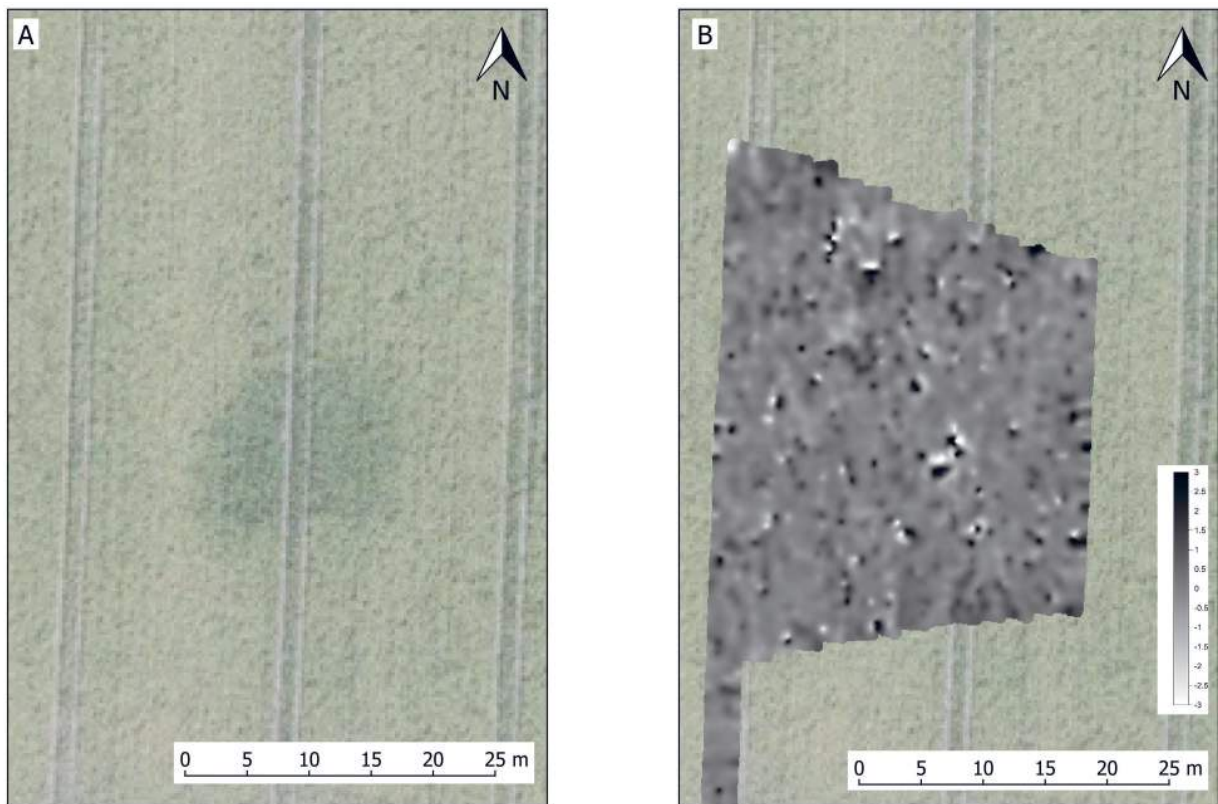
Miroslav Furmanek
Institute of Archeology
University of Wrocław
miroslaw.furmanek@uwr.edu.pl



1. Byczyna. Location of the battlefield. A, B – general maps, C – Theatrum Belli; the digital terrain model (ALS data obtained within ISOK Project; prepared by M Furmanek)



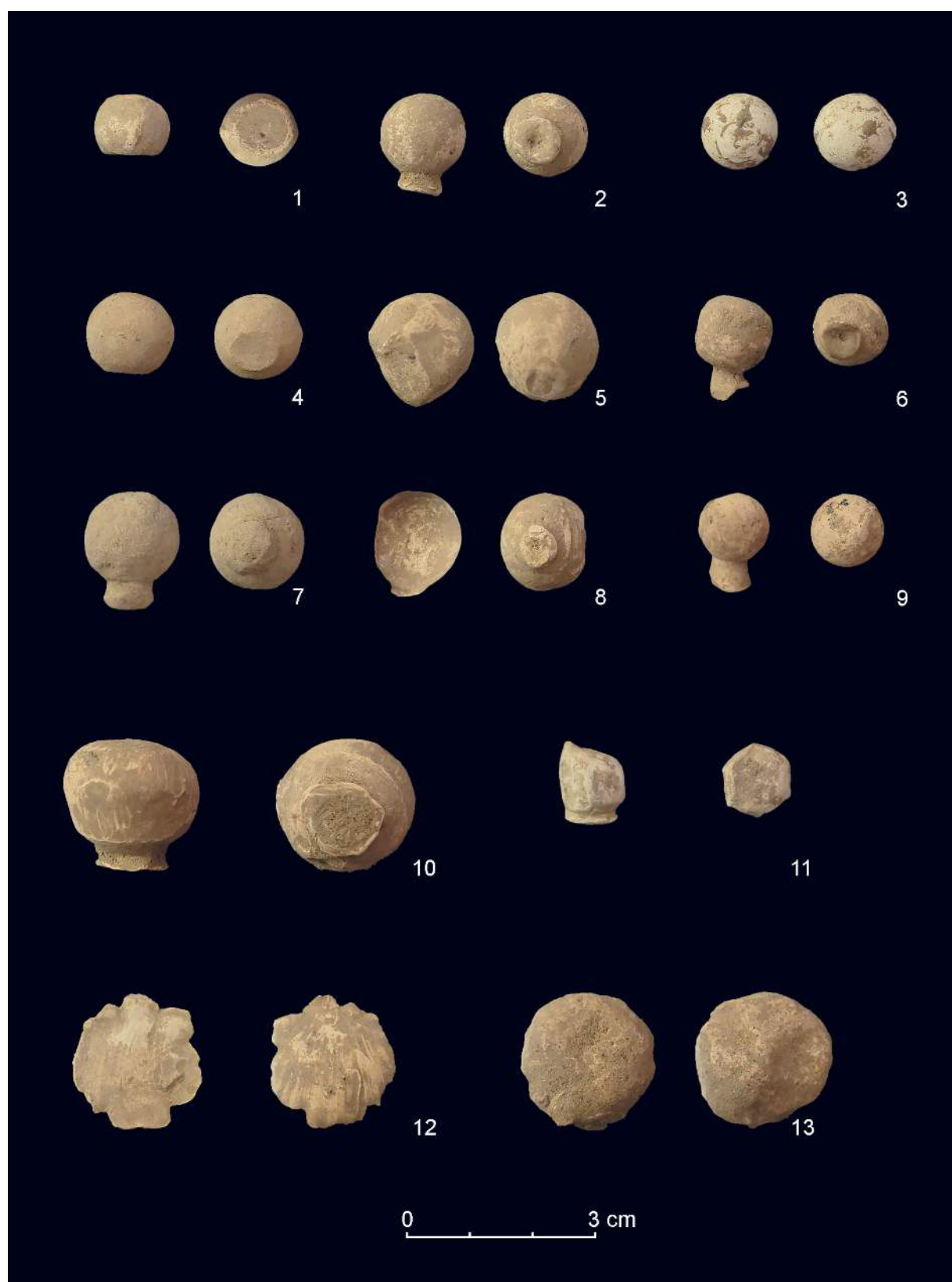
2. Byczyna. Selected example of crop marks in the battlefield area: A – location of cropmarks, B-E – example of a rectangular cropmark CR01 (B, C, D – Główny Urząd Geodezji i Kartografii; E – Maxar Technologies, Google Earth; prepared by M. Furmanek



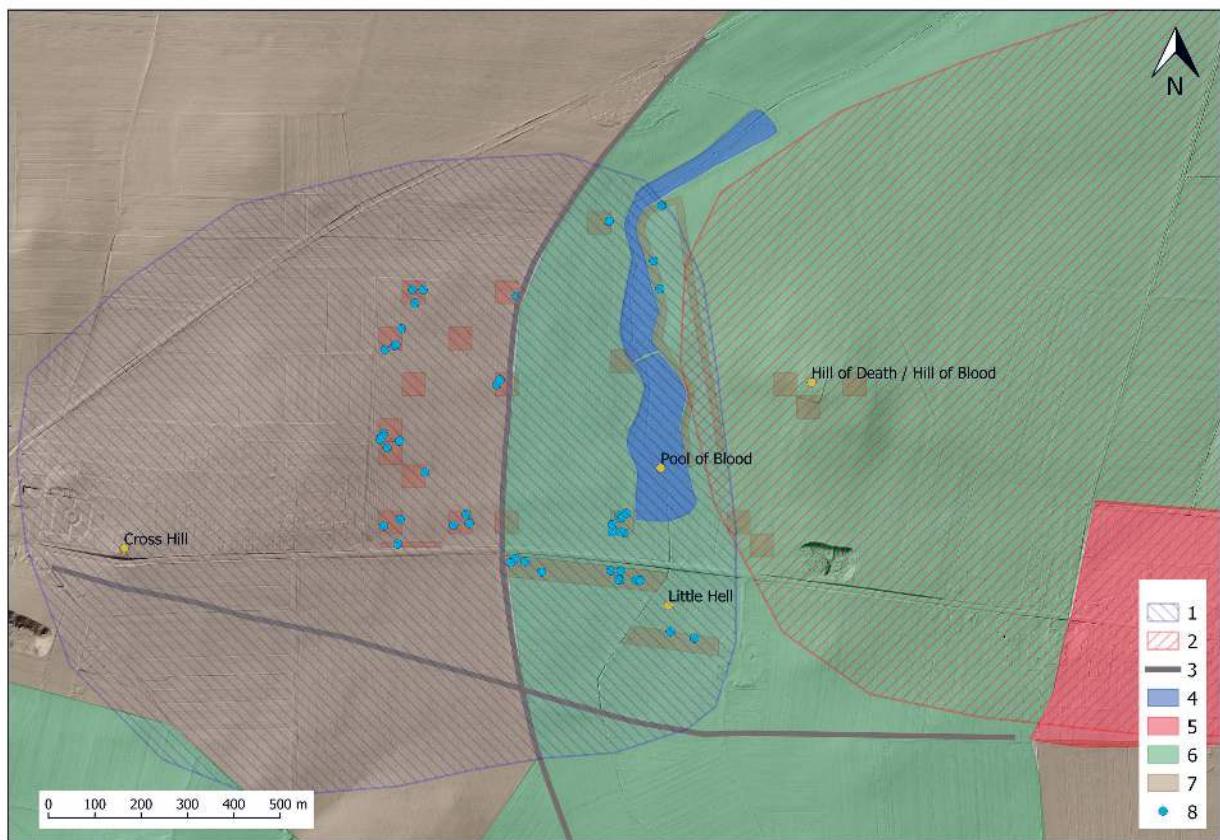
3. Byczyna. Geomagnetic survey results in the area of one of the crop marks (by M. Furmanek)



4. Byczyna. Distribution of finds from metal detecting: 1 – lead shots, 2 – other finds, 3 – the area of the metal detector surface survey (by M. Furmanek)



5. Byczyna. Selection of lead shots related to the battle of Byczyna (by M. Furmanek)



6. Byczyna. Battlefield landscape reconstruction:

1 – Zone of hostilities. Western hypothesis, 2 – Zone of hostilities. Eastern hypothesis, 3 – Extinct roads, 4 – Location of a pond, 5 – Range of the Roszkowice settlement, 6 – Forest or meadows, 7 – Arable land, 8 – lead shots (by M. Furmanek)