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Geophysical survey at Žitný ostrov, Slovakia, in 2012–2013

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As part of the Arcland Culture 2000 project focused on mapping of the archaeological landscape of Žitný ostrov, seven archaeological sites were chosen for geophysical research in 2012–13: Dunajská

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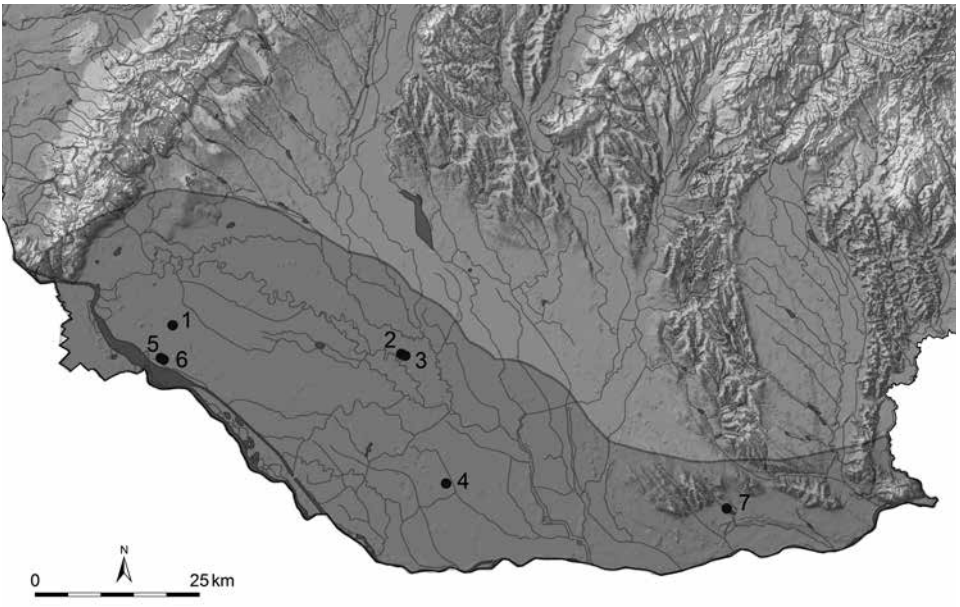

Fig. 1. Žitný ostrov area in the south of Slovakia with marked locations of geophysical surveys: 1. Dunajská Lužná, 2. Jahodná, 3. Tomášokovo, 4. Sokolce, 5. Hamuliakovo, 6. Šamorín, 7. Bátorove Kosihy

Lužná, Jahodná, Tomášikovo, Sokolce, Hamuliakovo, Šamorín and Bátorove Kosihy (Fig. 1). The locations were selected on the basis of an aerial survey of the area conducted by I. Kuzma, J. Rajtár and M. Bartík (Kuzma 2005; 2006). The geophysical prospection was executed with a Sensys fluxgate magnetometer. Five probes, placed 10 cm above the ground and 25 cm from one another, were used for measuring. Free MagPick (Germany) and Surfer 6 software were used for data evaluation.

Within the municipal boundaries of Dunajská Lužná, at the site of Svoradské, a number of circular and square features were recognized. The actual size of the geophysically measured area was 50 m by 150 m. Traces of a modern road and remains of features that could be parts of a settlement can be seen on the map of magnetic anomalies. Roman-age pottery finds were collected from the surface. Within the municipal boundaries of Jahodná, at the site of Družstevné, aerial images showed the outlines of groups of long houses. Aerial and field surveys together with surface artifact collection covered 50 m by 50 m. Outlines of three long houses, identified in the air shots, can also be traced on the magnetic map. Their approximate size is 15 m x 6 m and they resemble Eneolithic structures in type. The deeper-lying bedrock was sandy or pebbly. In Tomášikovo, at the site of Pukliny, groups of long houses identified in aerial images were traced in a magnetic map of an area 50 m by 50 m, which was also fieldwalked. The bedrock here consisted of pebbles.

At the Sokolce Pod záhradami site geophysical measuring and field survey were conducted in an area of 100 m by 100 m. The aerial images revealed a circular feature of unknown function and age. Three types of magnetic anomalies were traced. Firstly, linear magnetic anomalies indi-

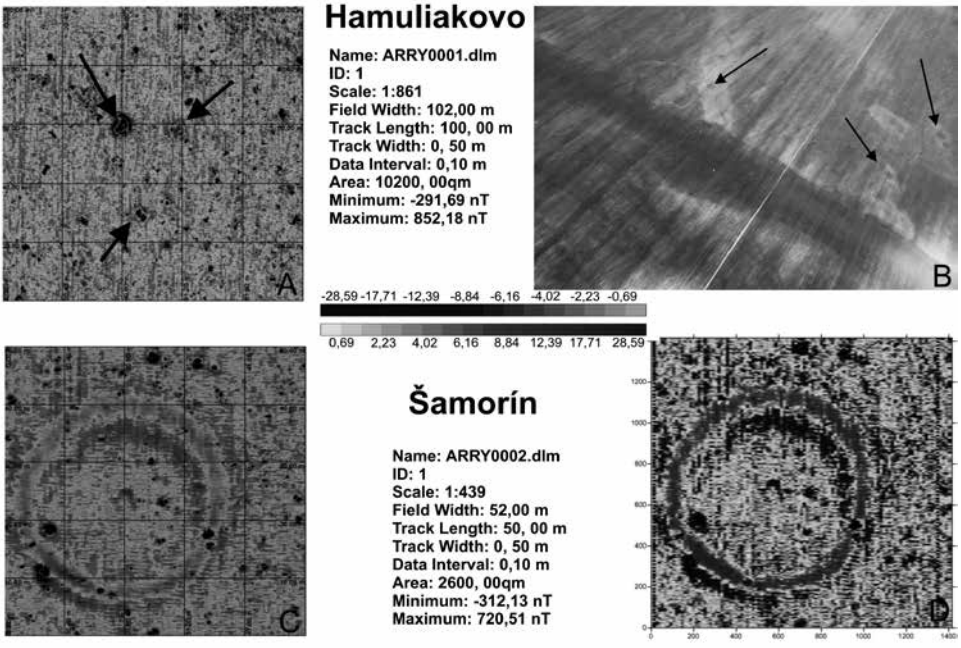

Fig. 2. Magnetic maps: A – late Roman settlement at Hamuliakovo (MagPick software with interpretation); B – Iron Age mound at Šamorín (MagPick and Surfer software)

cating linear archaeological structures, such as ditches and trenches, with values from -2 to 2 nT. Secondly, symmetrical magnetic anomalies most probably indicating archaeological features, reaching values from -4 to 4 nT. Finally, magnetic anomalies indicating recent iron artifacts, reaching values from -679 to -400 nT. Only probable archaeological features were highlighted in the interpretation. The circular feature was presumably a small circular fort (18 m in diameter) with a ditch (40 m in diameter). It might have been one of the towers built in the 16th and 17th century to withstand attacks of the Ottoman Turks.

A geophysical prospection of the site of Dolné in Hamuliakovo was carried out over an area of 100 m x 100 m, selected based on a metal detector survey. Metal finds, but also pottery from the Roman period were concentrated in the area. Anomalies corresponding to remains of settlement features were traced on the magnetic map. They are symmetrical, square or rectangular magnetic anomalies with values from -4 to 4 nT. Another group of anomalies reflected recent iron artifacts with values from -679 to -400 nT (Fig. 2:A). A group of Germanic residential buildings arranged in a circle and farm buildings were identified in the middle of the investigated area, visible also in Google Earth satellite photos. A field survey is needed to identify the actual function of the features. A surface collection of artifacts confirmed a date for the settlement in the Late Roman period (3rd–4th century AD).

At Šamorín, a geophysical survey and field survey were carried out at the site of Hamuliakovské (area of 50 m by 50 m). A circular feature with unclear function was identified in aerial

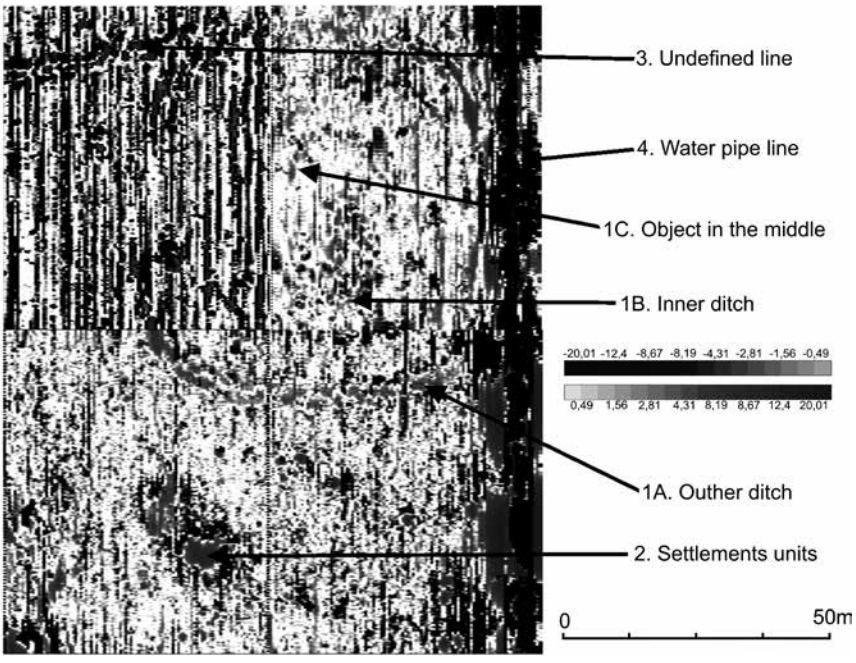

Fig. 3. Magnetic map of a small medieval fortification at Bátorové Kosihy (MagPick software with interpretation)

images. Magnetic anomalies varied from -312 nT to 720 nT. It is presumably a circular mound with a diameter of 30 m and a perimeter ditch (Fig. 2:B). The feature will be dated only once a field archaeological survey is carried out.

The archaeological investigation in Bátorové Kosihy, at the site of Fenyér, was carried out over an area of approximately 1.2 ha (100 m x 120 m). Aerial images were compared with old military maps. A circular feature with several ditches is marked on the first military map. The investigated area featured sandy terrain. Four different types of local magnetic anomalies were observed on the final map: linear anomalies indicating the course of linear archaeological structures, such as ditches and trenches (Fig. 3: anomalies 1A, 1B, 1C) with values from -2 to 4 nT; symmetrical anomalies, most probably indicating archaeological features with values from -4 to 9 nT (Fig. 3: anomaly 2); linear anomalies corresponding to the course of utilities with values from -4 to 7 nT (Fig. 3: anomaly 3); a linear magnetic anomaly with high values (-405 to 575 nT) indicating a high-pressure gas pipeline (Fig. 3: anomaly 4). The potential archaeological site is a small fortified feature with three identifiable lines of defences. The widest line (anomaly 1A) is up to 2 m wide with an overall diameter of 70 m. The second line (anomaly 1B) shows a diameter of 40 m. The third and smallest line (anomaly 1C) is 1.0–1.5 m wide and lines a quadrant with a diameter of 20 m. The surface material is highly fragmented medieval pottery from the high period, that is, from the 12th and 13th centuries.

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