

The unique settlement microregion of the Lusatian Urnfield culture in Łazy (SW Poland): fieldwalking and geophysical survey results

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Abstract

Cremated cemetery and three settlement sites were surveyed. Magnetics and electrical resistivity provided a suggestive location for the cemetery. Magnetic prospection of the surrounding settlements provided a less clear picture. Surface material indicated the presence of previously unregistered episodes of settlement.

Keywords

cremation cemetery; electrical resistivity survey; Lusatian urnfield culture; Lower Silesia; magnetic survey

Introduction

In the region of Łazy village (Wińsko Commune, Lower Silesian Voivodeship, SW Poland) there is a unique settlement microregion of the Lusatian Urnfield culture (Fig. 1A), dated to the period between *Montelius' Period IV* and Hallstatt D (ca. 1100-400 BC). The cremation cemetery (site 1) located on a parabolic dune is one of the central places of this area. The site was discovered at the end of the 19th century as a result of sand extraction. At the time, a unique urn with a narrative scene depicting deer hunting was found. In the following years, numerous accidental finds as well as salvage excavations were reported. Altogether 187 cremation graves were discovered, mostly with stone constructions, some of which had the form of paving (Fig. 1B). Among them, especially interesting is the chambered grave (no. 4/95) dated to Hallstatt C (Fig. 1C). The grave is considered to be a burial of a noble warrior connected with the Hallstatt culture area (Madera 1999, 2002).

Our knowledge about the settlement network in the area is much poorer and chronologically unprecise. Therefore, in 2020-2021, we undertook a new non-invasive survey aimed at verifying the sizes and shapes, as well

as functions and chronology of selected sites (site 1, 7, 18 and 25) that belong to this settlement cluster.

Methods

The core of the fieldwork agenda comprised fieldwalking and geophysical prospections with the use of magnetic and electrical resistivity method. The burial ground is forested, whereas neighbouring settlement sites are located on crop and wastelands, which made us adjust the methods.

The surface survey was completed during the fall 2021 by using the transect walking method with 10 m intervals between the parallel lines. The location of each find was recorded using a handheld GPS. Their spatial distribution was visualized with the use of QGIS as a *heatmap*. As no stray artefacts were found on the surface of the cemetery, only pebbles were recorded poking up through the leaf litter and thereby probably marking the presence of burial constructions – the dune composition should not contain larger stones originally. Considering measurements made

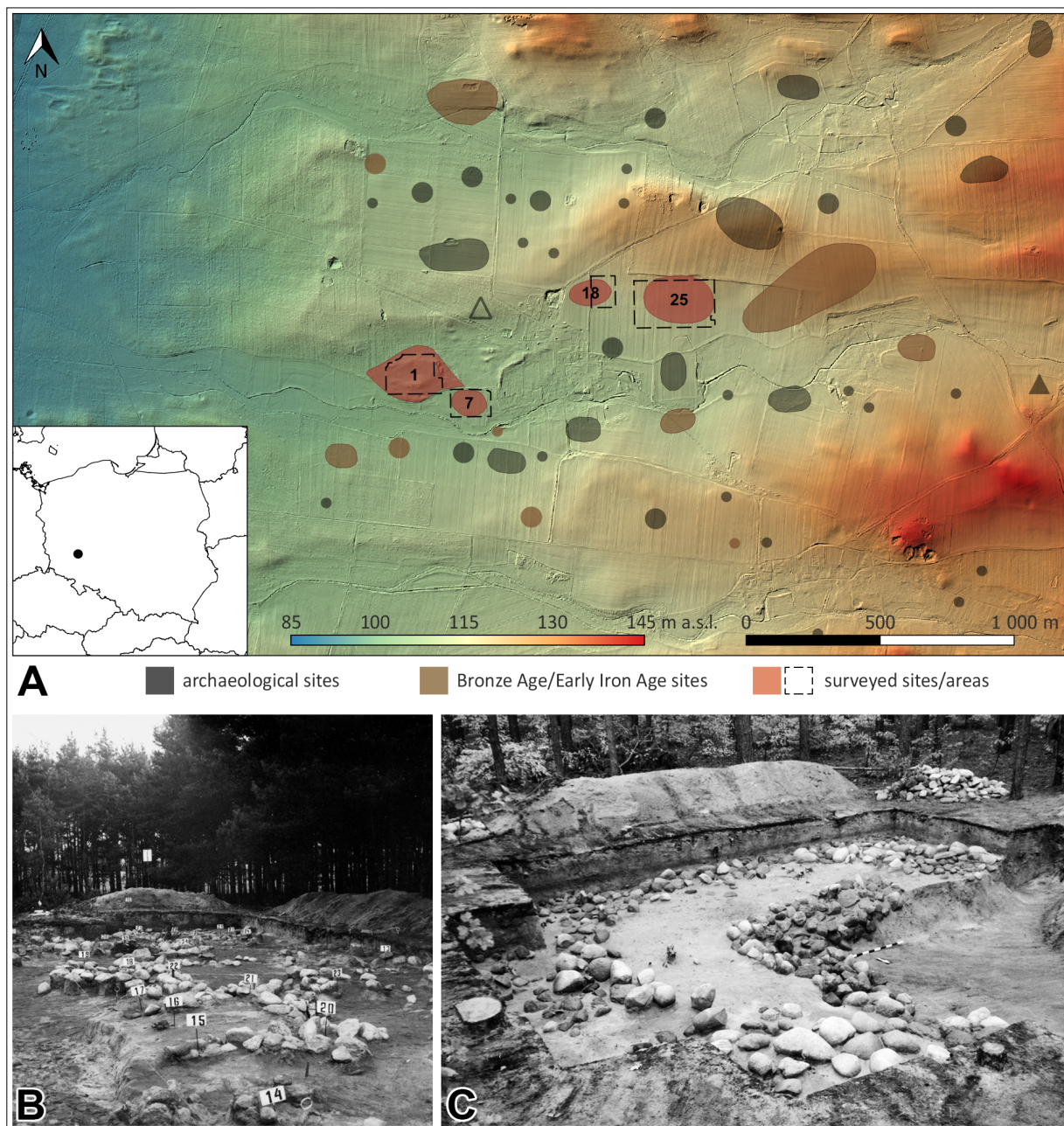


Fig. 1: (A) Microregion near Łązy. The sites marked in orange and red are associated with the Lusatian Urnfield culture. Surveyed in 2020 are marked in red (base map: hillshaded DTM based on National Geodetic and Cartographic Resource datasets); (B) stone structures recorded during excavation in (1974, WOAK Wrocław, author unknown); (C) chambered grave 4/95 (1995, photo P. Madera).

with the handheld GPS units to be insufficiently precise for correlations with the results of geophysical prospections, the localization of stones was recorded with the use of a total station, which turned out to be quite time-consuming in dense forest conditions (Fig. 2A).

The magnetic survey with the use of Bartington Grad 601-2 fluxgate gradiometer was performed on the area

of about 11 hectares. The survey was conducted with a traverse interval of 1 m in the woodland and 0.5 m in the open areas. All the data recorded were processed with the use of DW Consulting TerraSurveyor Lite software.

The electrical resistivity survey covered approximately one hectare within the area of the burial ground. A RM

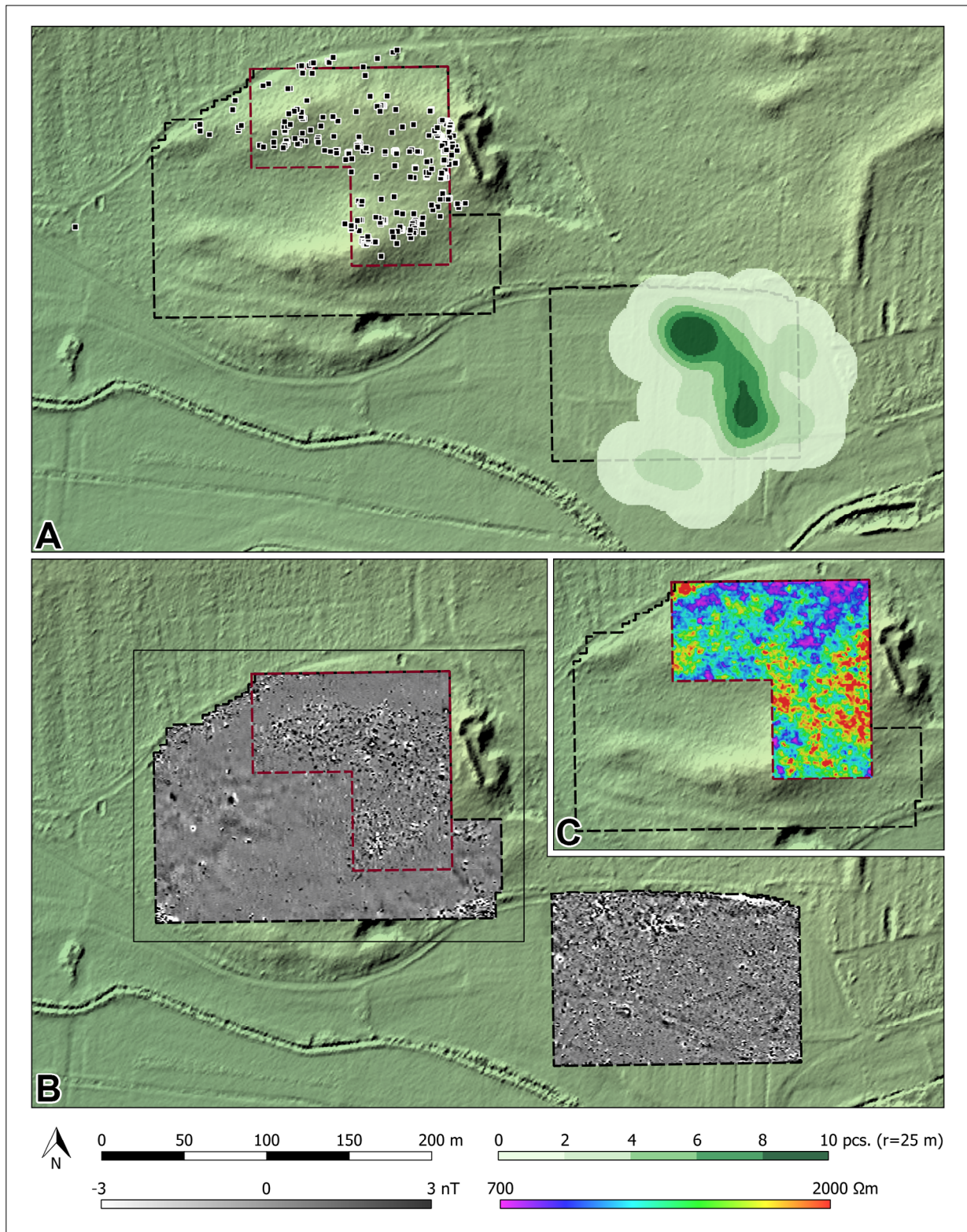


Fig. 2: Sites 1 and 7: (A) distribution of stones on the surface (black rectangles) and Bronze Age and the Early Iron Age ceramics (heatmap, $r = 25\text{m}$); (B) magnetic map; (C) resistivity map (base map: hillshaded DTM based on National Geodetic and Cartographic Resource datasets).

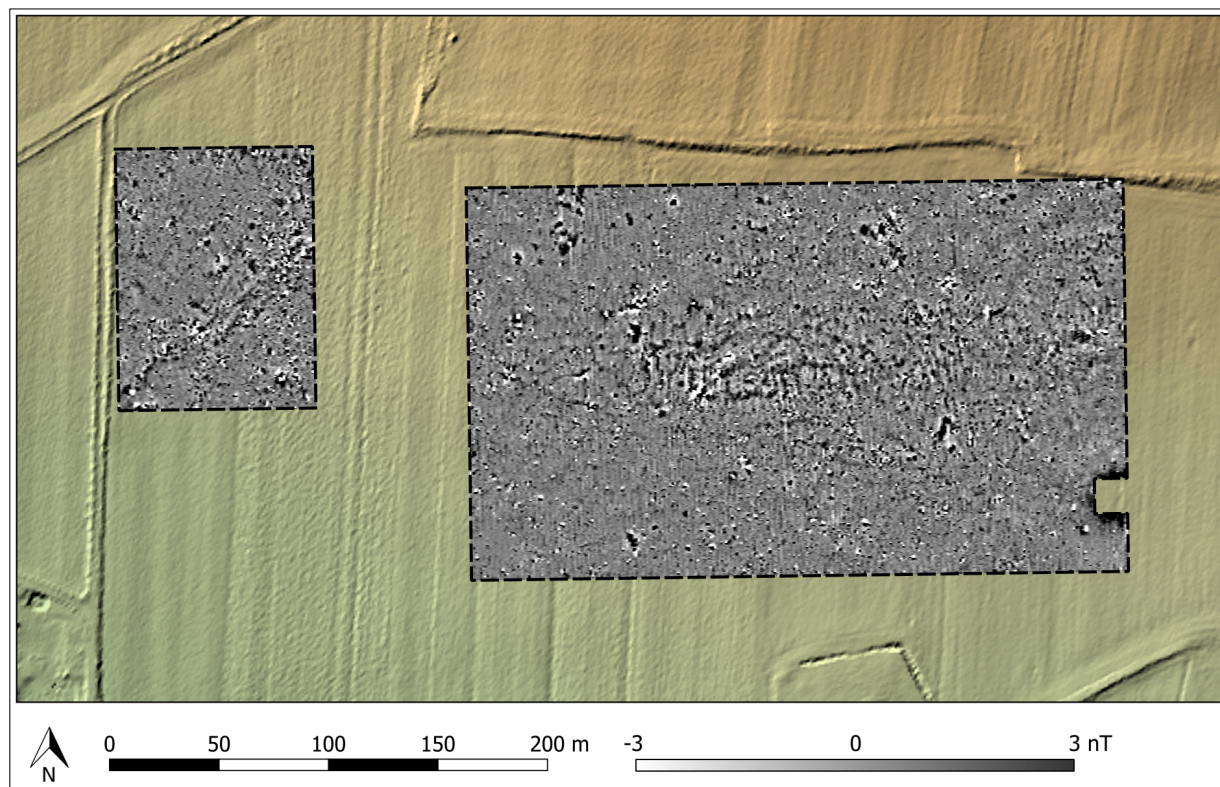


Fig. 3: Sites 18 and 25: magnetic map (base map: hillshaded DTM based on National Geodetic and Cartographic Resource datasets).

Frobisher TAR-3 system was used to perform measurements with a $1\text{ m} \times 1\text{ m}$ resolution. Thanks to the use of the 0.5 m probes spacing Wenner array, there was no need to handle additional cables, which made it easier to move within the trees and bushes. The data processing of the results was completed using the Snuffler 1.3 software.

Results

The magnetic survey provided quite a suggestive picture of the burial ground, revealing its shape, dimensions and arrangement (Fig. 2B). The sandy substrate of the dune made it possible to obtain good magnetic contrast. Positive and highly dynamic readings were recorded mainly at the top of the horseshoe-shaped dune. These were probably induced by erratics commonly used for construction of graves and pavings. The distribution of anomalies corresponds well with the dispersion of stones occurring on the surface of the site. It must be stressed though, that different rocks had different magnetic susceptibilities, which resulted in quite a variability of magnetic signatures recorded. The recorded anomalies constitute a few apparent

clusters of different densities, which seems to indicate that the area was used with varying intensity.

The main aim of the electrical resistivity survey was to record structures undetectable with the use of the magnetic method (e.g. pavements or chambers made of low magnetic susceptible stones). In the general picture obtained, an apparent variability of recorded values resulting from topographic and ground moisture conditions was revealed (Fig. 2C). On this background, more local, sometimes just one-point anomalies could be distinguished. The locally increasing values could indicate the presence of stone features; again, they often correspond with the dispersion of erratics on the surface.

The magnetic survey on the "settlement area" provided us with a less clear picture (Fig. 3). The sites were located in a valley on sands and sandy loams, or on the valley's slopes built of boulder clays. Indicating readings that could be undoubtedly correlated with remains of a given human activity was quite difficult, and must have been limited to distinguishing larger and stronger signals. Such anomalies were relatively scarce and usually sparse, which may indicate a low density and generally poor preservation conditions of anthropogenic features.

Due to the small number, low frequency and strong chronological differentiation of ceramic finds, the field-walking provided no firm basis for clarifying the question of the nature and intensity of the settlement processes. Nevertheless, the collected material definitely changes the pre-established shapes and extents of the sites, consequently extending the local preservation area. Also, they indicate the presence of previously unrecorded prehistoric cultural phenomena.

Conclusions

The effectiveness of non-invasive geophysical methods for investigating cremation cemeteries depends on many factors. Despite difficult field conditions (i.e. the dense forest cover), which not only made the research more difficult but also strongly affected the quality of the resulting data, the picture obtained for Łazy is quite detailed and revealing. This was possible thanks to the presence of easily detectable grave constructions (i.e. stone linings and pavings). The magnetic and electrical resistivity surveys carried out on the dune as well as the documentation of erratics dispersed on its surface, provided a highly valuable package of complementary spatial data reflecting the shape and size of the burial ground and the varying density of features, at least of those detectable in this manner. Also, it was often possible to distinguish particular graves. On the contrary, the quality of analogue data obtained for neighbouring settlement sites are somewhat unsatisfactory. Observation conditions precluded the recording of more subtle anomalies, for which the picture obtained seems to be incomplete.

Acknowledgments

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