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To not see the forest for the trees. A non-invasive approach to the Góra Chełmo medieval hillfort

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The hillfort in Góra Chełmo was described for the first time in archaeological literature by J. Kamińska. It was excavated in 1955–56, during the construction of an observation tower for the forestry authorities. Only two trenches were completed and a basic chronology of the site established to the 10th–13th centuries AD (Kamińska 1958). Kamińska reported only three lines of ramparts, covering the top part of Góra Chełmo, which at 232 m a.s.l. is the highest hill in the relatively flat area of the Łódź region. In the early 2000s, during a fieldwalking survey, J. Sikora (2008) discovered two more embankment lines of the hillfort.

The 15th century chronicler Jan Długosz described Góra Chełmo among the most important mountains in the Kingdom of Poland and attached great symbolical meaning to it. According to this description, the church on the hilltop had been founded by Piotr of Skrzynno, one of the most prominent Polish noblemen from the first half of the 12th century. The church building was said to be surrounded by seven lines of moats.

A non-invasive survey in 2013–14 was aimed at identifying the spatial structure of the fortifications, interior features (among others, buildings and possible remains of the church) and elements of the communication infrastructure. It also aimed at determining the purpose of the fort (in archaeological literature it was supposed to be connected with pre-Christian ritual activity). One of the objectives was also to ascertain the state of preservation of the stronghold and identify potential threats. The project started with a study of aerial images and analysis of aerial laser scanning-derived maps (using LAS point clouds prepared for a national ISOK program). Aerial prospection revealed only crop marks connected with the denudation valley located south of the mount, which was likely used as a road connecting to open settlements recorded around the hillfort, mostly on its southern side. It could not bring any new data about the hillfort itself, as the area is completely forested. In this situation, LiDAR-derived DTM maps proved very helpful (Fig. 1). They allowed two previously unknown lines of moats and ramparts to be detected, giving a total of seven ramparts, which is which is the number that Jan Długosz described. The area enclosed by this rampart system covers 11.7 ha, making the Góra Chełmo defensive structure the largest known early medieval stronghold in central Poland. For the sake of comparison, the ring-fort in Łęczyca, which was a local power center and a princely seat in the 13th century, is thought to encompass an area of about 1 ha. The

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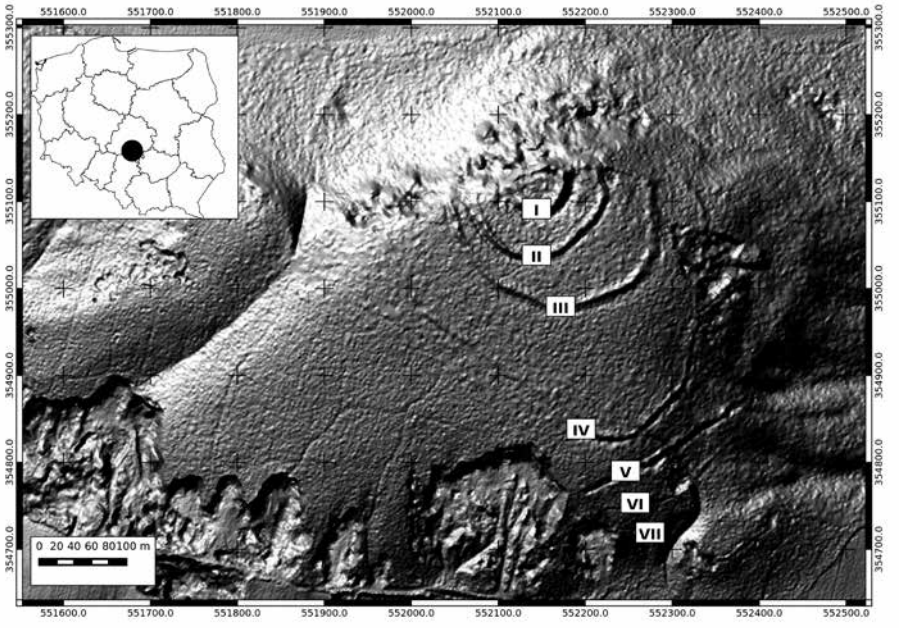

Fig. 1. Góra Chełmo: LiDAR-derived hill-shaded Digital Elevation Model with a numbering of the ramparts used in the text

ring-fort in Sieradz, an important administrative (castellan and later even princely) seat, takes up about 3 ha, the stronghold in Spicymierz, the favourite seat of the Gniezno Archbishop in the 12th century and also a castellan seat, about 1,5 ha.

Additional data came from the magnetic gradiometry survey, which took place in unfavourable forest conditions (Fig. 2). The surveyed area covered 5 ha and it was augmented by a small-scale earth-resistance survey. Different magnetic anomalies corresponding to elements of the rampart were registered. While the course of the second rampart was determined by two parallel linear dipolar anomalies, the course of the third, fourth and fifth ramparts generated a single positive linear anomaly. A rectangular anomaly adjoining the fourth rampart suggests the existence of a stone gate foundation, perhaps similar to the one excavated at the ring-fort in Kaszów (Dzieduszycka 1977: 73–75, fig. 2). Such an interpretation is further supported by the presence in this place of another magnetic anomaly, oriented N–S, which could be seen as a communication route. Another interesting feature recorded during the prospection was a linear magnetic anomaly concentric to the first rampart, the area of the bailey between it and the second rampart. It was interrupted by another rectangular-shaped object, probably an anthropnic feature (gate?). These anomalies can be interpreted as traces of the spatial organization inside the hillfort. A similar linear anomaly, although with a weaker magnetic characteristic, was registered between the second and third ramparts. It ran partly parallel to the axis of the ramparts, but in the southern part was combined with the third rampart. None of the recorded anomalies could be interpreted as the remains of the church known from the written source.

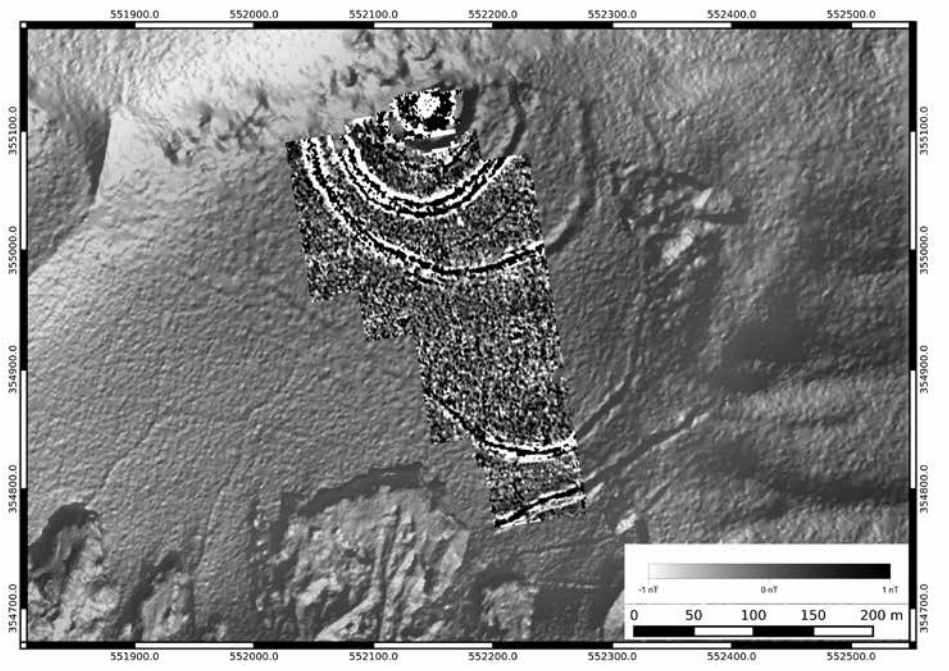

Fig. 2. Góra Chełmo: results of the geophysical (magnetic) survey (background: LiDAR-derived hill-shaded DEM)

A phosphorus survey yielded further information (Fig. 3). It was carried out in an area of 7.7 ha, using a simplified field method developed by Kittel and Sygulski (2010). Data analysis clearly demonstrated the existence of zones of high or extremely high phosphorus content in an area enclosed within the rampart system. These can be understood as being a geochemical record of either a skeletal cemetery (an unlikely option as burial grounds were seldom associated with ring-forts) or intense settlement activity in the past. This observation is of utmost importance in the context of hypotheses proposed in a previous paper on the cult function of the Góra Chełmo hillfort with regards to pre-Christian religion (Kamińska 1971: 56; Chmielowska and Marosik 1989: 101). The recorded high phosphorus rate is new important evidence suggesting settlement rather than ritual activity.

ACKNOWLEDGMENTS

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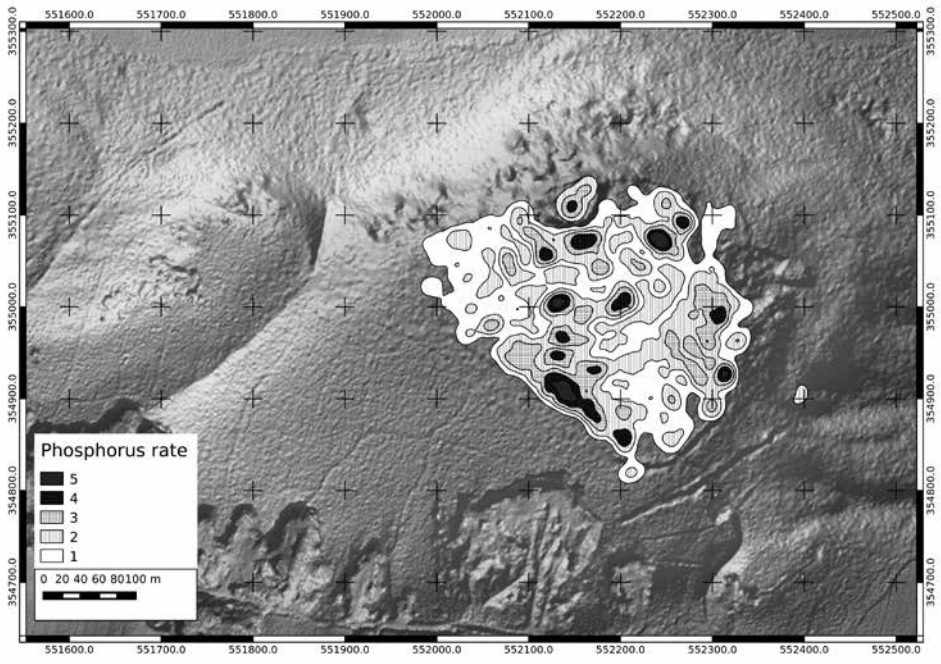

Fig. 3. Góra Chełmo: results of the phosphate and geophysical survey superimposed on a LiDAR derived hillshaded DEM (Legend: phosphorus level in the ground: 1 – low, 2 – average, 3 – high, 4 – very high, 5 – extremely high)

REFERENCES

Chmielowska, A. and Marosik, P. 1989. *Wczesnośredniowieczne budownictwo obronne między Prosną a Pilicą*. Warszawa – Łódź.

Dzieduszycka, B. 1977. Ze studiów nad wczesnośredniowiecznymi technikami budownictwa obronnego. Umocnienia wczesnośredniowiecznego Kaszowa w województwie wrocławskim. *Slavia Antiqua* 24: 73–118.

Kamińska, J. 1958. Grodzisko wyżynne w Chełmie, pow. Radomsko. *Prace i Materiały Muzeum Archeologicznego i Etnograficznego w Łodzi. Seria Archeologiczna* 3: 127–140.

Kamińska, J. 1971. Grody Polski środkowej w organizacji wczesnopaństwowej. *Prace i Materiały Muzeum Archeologicznego i Etnograficznego w Łodzi. Seria Archeologiczna* 18: 41–74.

Kittel, P. and Sygulski, M. 2010. Ślady osadnictwa pradziejowego i historycznego w otoczeniu torfowiska Żabieniec. In J. Twardy, S. Żurek, J. Forysiak (eds), *Torfowisko Żabieniec: warunki naturalne, rozwój i zapis zmian paleoekologicznych w jego osadach*. 97-112, Poznań.

Sikora, J. 2008. Grodzisko wczesnośredniowieczne na Górze Chełmo. Badania, interpretacje, hipotezy. *Prace i Materiały Muzeum Archeologicznego i Etnograficznego w Łodzi. Seria Etnograficzna* 34: 21–35.