
CINCȘOR ROMAN FORT: NEW DATA AND A REVISED PLAN FROM RECENT GEOPHYSICAL RESEARCH

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ABSTRACT

The 2025 geophysical survey conducted around the Cincșor Roman Fort (Brașov County) aimed to reconstruct the planimetry and to identify the internal structures of the fortification and its adjacent civil settlement. The research employed high-resolution magnetometric measurements, complemented by Ground Penetrating Radar (GPR) investigations. The results allowed the delineation of the fort's perimeter, the estimation of its dimensions, the identification of barracks *per scamna*, and the detection of the main internal structures, including the external *fossae*. Four interruptions corresponding to the gates were recorded, although their exact outlines could not be determined, and no traces of corner or curtain towers were observed. The civil settlement (*vicus*) is visible mainly on the southern side, extending towards the edge of the reservoir, and displays a coherent organisation in relation to the fort's enclosure. The campaign provides significant data for correlating geophysical observations with previous archaeological research and opens new perspectives on the topographic and functional evolution of the site.

REZUMAT: CASTRUL ROMAN DE LA CINCȘOR. DATE NOI ȘI UN PLAN REVIZUIT DIN CERCETĂRI GEOFIZICE RECENTE

Campania de prospecțiuni geofizice desfășurată în anul 2025 în zona castrului roman de la Cincșor (jud. Brașov) a avut ca obiectiv reconstituirea planimetriei și identificarea structurilor interne ale fortificației și ale așezării civile adiacente. Cercetările s-au realizat prin măsurători magnetometrice de înaltă rezoluție, completate prin investigații GPR (Ground Penetrating Radar). Rezultatele obținute permit conturarea laturilor castrului, estimarea dimensiunilor, evidențierea barăcilor *per scama* și identificarea principalelor structuri interne, inclusiv a fossae-lor exterioare. Au fost semnalate patru întreruperi ale incintei corespunzătoare porților, fără a putea fi conturate cu precizie; nu au fost detectate contururile turnurilor de colț sau de curtaină. Așezarea civilă (*vicus*) este vizibilă mai ales pe latura sudică, până la marginea lacului de acumulare, și indică o organizare coerentă în raport cu incinta. Campania oferă date relevante pentru corelarea observațiilor geofizice cu cercetările arheologice anterioare și deschide perspective noi privind evoluția topografică și funcțională a sitului.

KEYWORDS: Dacia, Roman fort, *vicus*, geophysical prospecting, Cincșor.

CUVINTE CHEIE: Dacia, castru, *vicus*, prospecțiuni geofizice, Cincșor.

Introduction.

The fort is located approximately 4 km east of Cincșor village (Voila commune, Brașov County), on the right bank of the Olt River, at the point known as Burgstadt or Grădiște¹. No traces of the fort are currently visible on the surface, and its identification was made possible only through a series of archaeological excavations carried out over time: by I. Pop in 1974–1975, by I. Pop and L. Petculescu during several campaigns between 1980 and 1989, and by D. Isac in 1992. According to the conclusions of these investigations, the fortification was largely destroyed by soil erosion, with only a small portion of the south-western corner remaining preserved.

The main objective of the recent surveys was to identify the outline of the fort and to document the elements of its defensive system. By correlating the accumulated archaeological information with new field observations and by extending one of the previously excavated sections, the south-western corner of the fortification could be reconstructed (fig. 3–4). The available evidence supports the existence of an earlier timber-and-earth fort, later

¹ RAN: 42325.01; BV-I-m-A-11266.01.



1. Map of Roman Dacia with the location of Cincșor fort

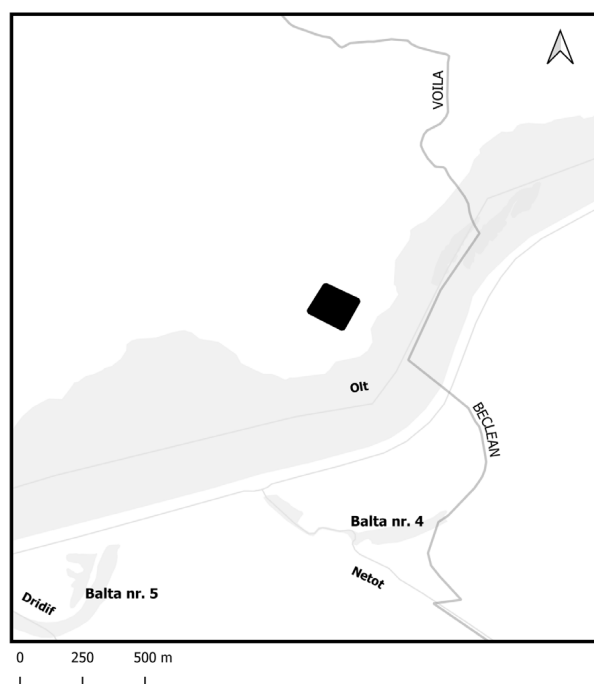
replaced by a rectangular fortification with a stone enclosure, of which the precise dimensions remain uncertain. Inside the enclosure, the wall impressions of a timber-built structure were identified, indicating the presence of internal constructions belonging to the earliest occupation phase².

The presence of Cohors II Flavia Bessorum in this fort was attested by the discovery of brick stamps (IDR III 4, 181; ILD 426) and by an inscription on a funerary monument erected by a prefect of the unit (IDR III 4, 179). In 1986, a bronze mask, part of a helmet (*Gesichtshelm*) used in the *hippika gymnasia*, was discovered near the Olt River³, during utility works on its riverbed. The mask was probably deposited in the river as a votive offering by a cavalryman, consistent with the widespread practice of ritual deposition of helmets and masks in watery contexts⁴. On the surface, the outlines of former archaeological sections are still visible, mostly backfilled with soil. By correlating the

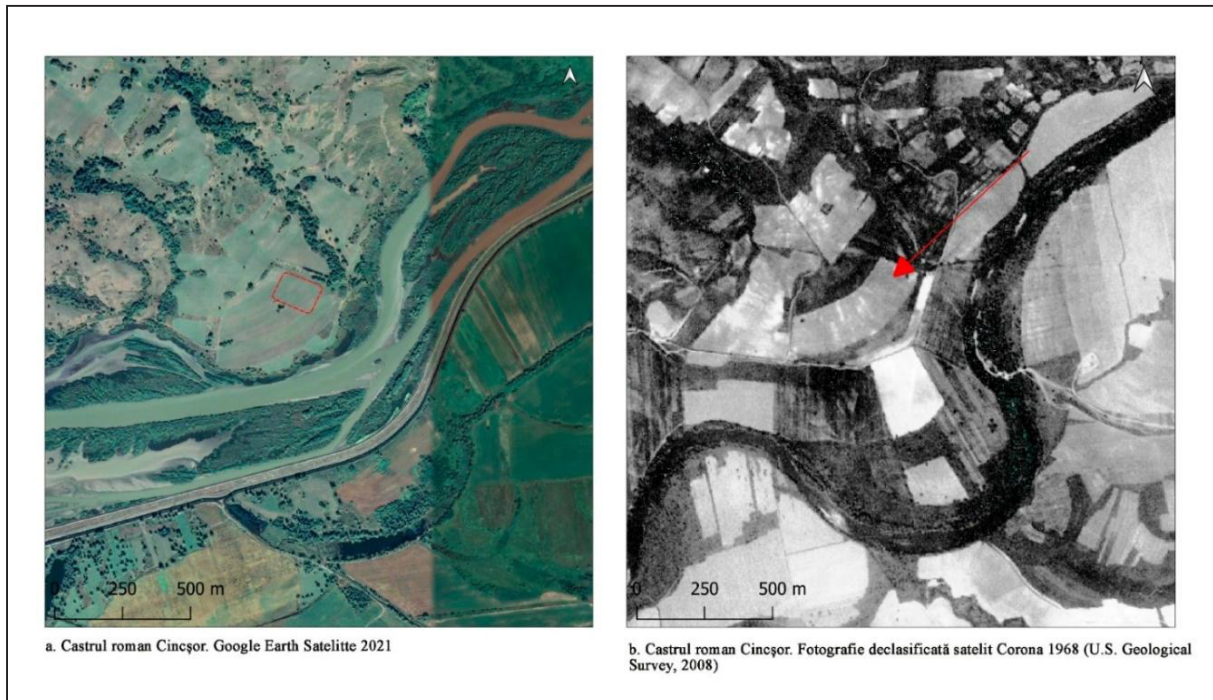
² Christescu 1937, 44, 51, 61, 183; Tudor 1968, 281; TIR L 35, 32; Vlădescu 1983, 115, nr. 23; Pop 1983, 43-46; Vlădescu 1986, 81; Dragotă, Gh. 1987, 276-280; Isac D. și Isac A. 1994, 103-112; Gudea 1997, 67-68, nr. 44; Gudea 2005, 497, nr. VII. B.8; Marcu 2009, 202-203, nr. 54.

³ Dragotă 1987, 276-280.

⁴ Van Driel-Murray 1989; Bishop, Coulston 2006, 239-241; Rațiu, Simion, Angheluță 2023, 681-682.



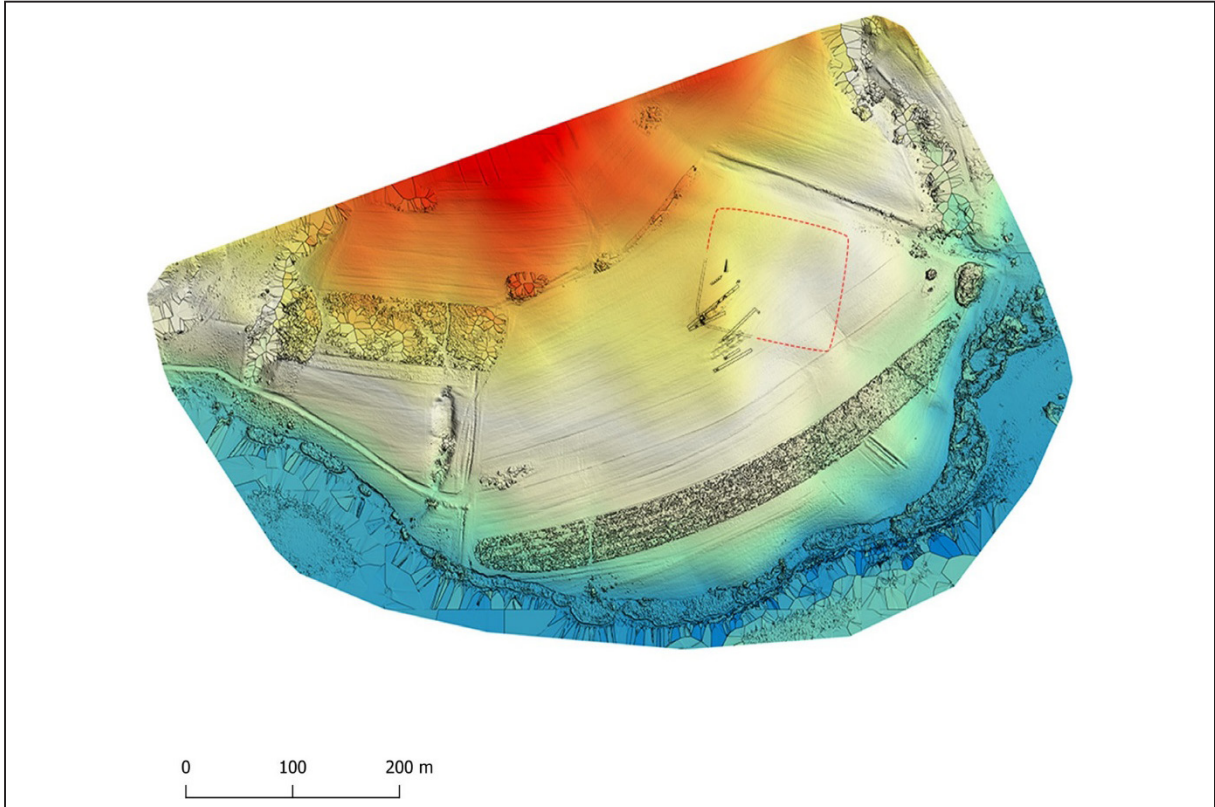
2. Cincșor, the location of the fort (after Țentea et al. 2019, 19, fig. 3.1)



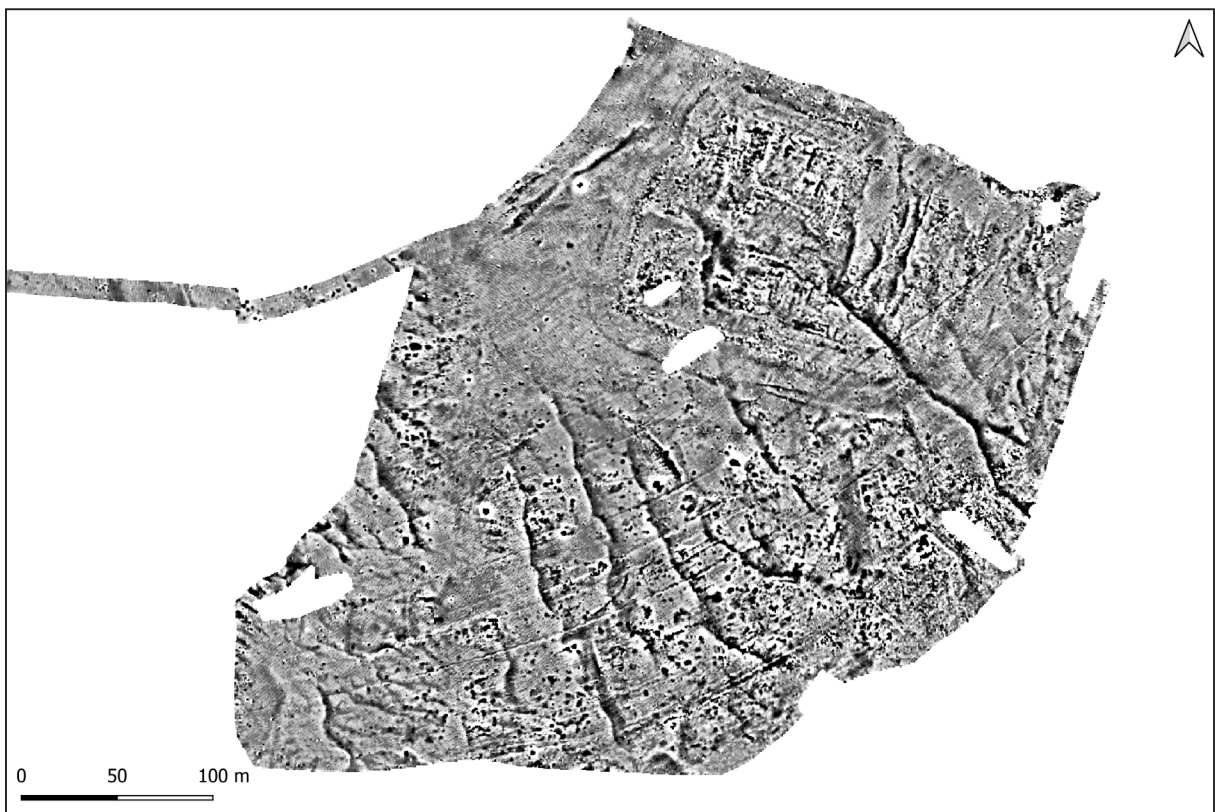
3. Location of Cincșor fort on Google Earth 2021 satellite image, respectively Corona 1968, (after Țentea et al. 2021, 320 fig. 7).



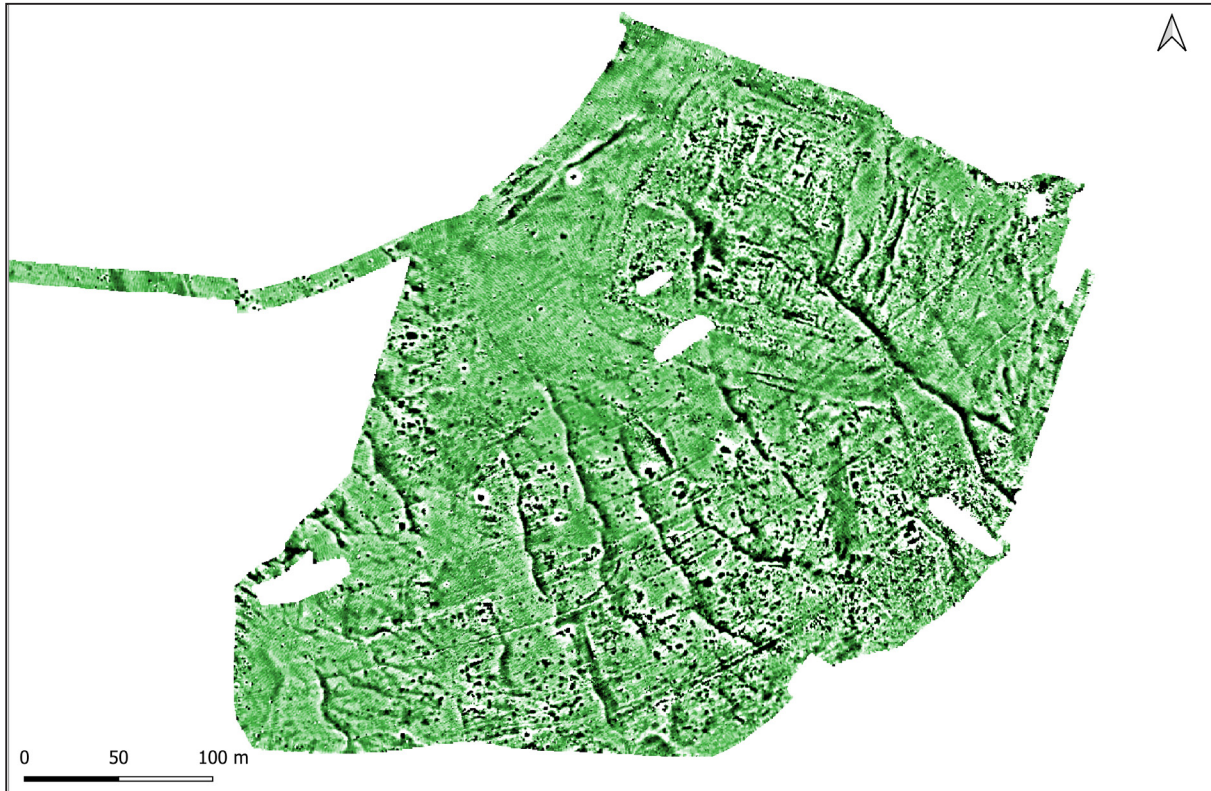
4. Cincșor, oblique drone photo, view from the southeast (after Țentea et al. 2019, 21 fig. 3.5).



5. Cincșor, reconstruction of the plan (Isac, Isac 1994, 105, fig. 2) superimposed on the digital model of the field (after Țentea et al. 2019, 22, fig. 3.8)



6. Results of geophysical surveys in the Cincșor fort and settlement - September 2025



7. Results of geophysical studies in the Cincșor fort and settlement - September 2025 (green background)

cartographic data with information derived from publications, field observations, and the digital terrain model obtained through drone survey, several hypotheses regarding the fort's layout could be proposed (fig. 8). The most plausible reconstruction suggests a rectangular fortification, measuring approximately 130 m on the south side and 110 m on the west⁵.

Recent geophysical surveys have made it possible to reconstruct the planimetry and internal organisation of the site, thereby enhancing our understanding of the functioning of such fortifications within the Roman administrative and military system. The non-invasive geophysical campaign conducted in 2025 aimed primarily at reconstructing the general layout of the fort and determining its limits and dimensions; identifying internal structures such as barracks and principal administrative buildings; detecting the external defensive system (*fossae*, gates) and its spatial relationship with the adjacent civilian settlement (*vicus*); and correlating the geophysical data with previous archaeological observations to achieve an integrated interpretation of the site.

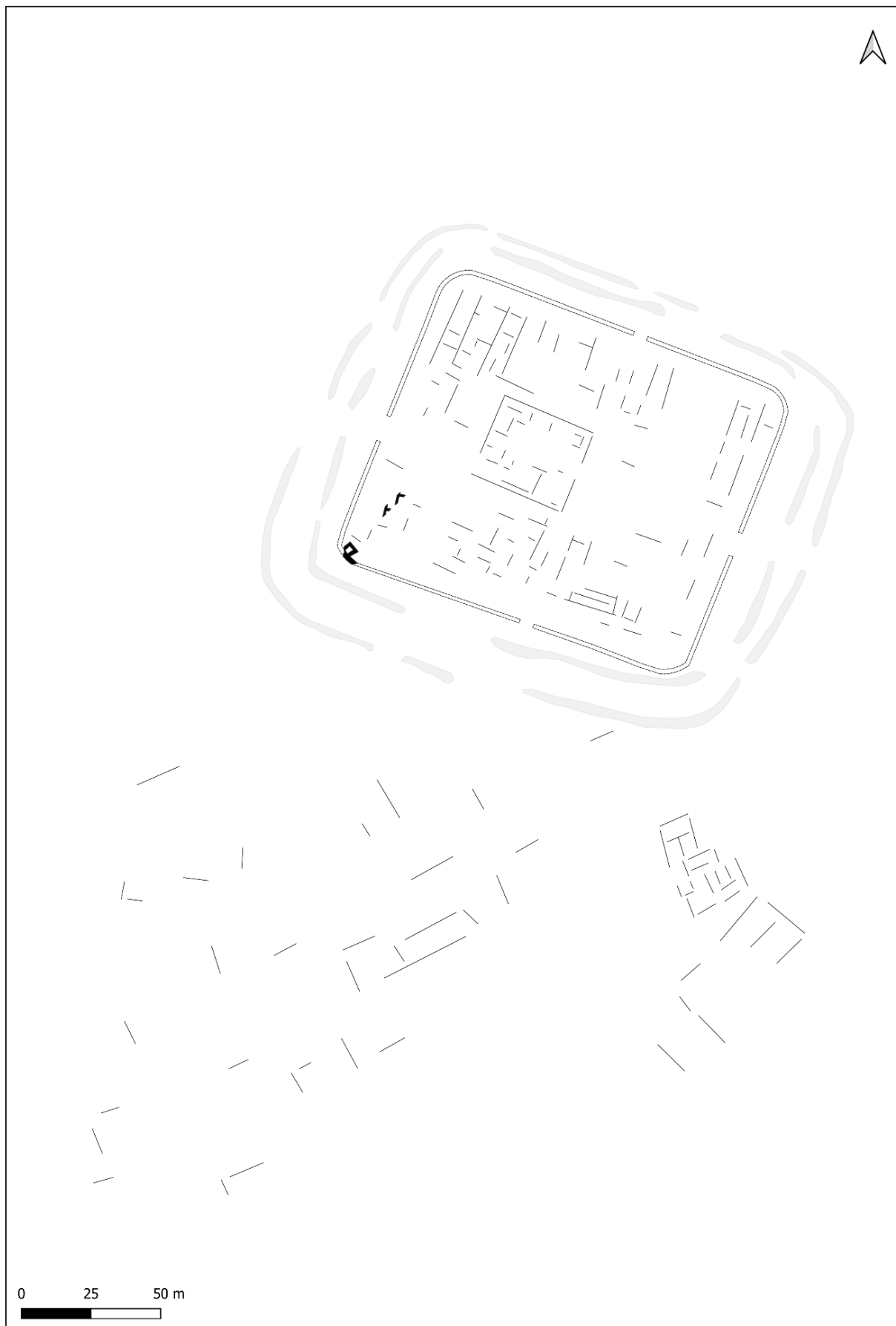
Research method

For data acquisition, a five-sensor magnetometer equipped with five FGM650B probes manufactured by Sensys GmbH was used. The equipment measures the vertical component of the Earth's magnetic field with the help of the two magnetometric sensors of each probe, arranged one above the other. Proper calibration of magnetometric probes provides measurement accuracy of about 0.1-0.5 nT. The probes were mounted on a non-metallic trolley, 50 cm away from each other, so that during the movement, a strip 2.5 m wide was measured. In the direction of movement, a pulse was recorded every 5 cm. Geomagnetic values acquired with the help of the described equipment were processed by interpolation and compensated by the median filter algorithm. The results of the data interpolation were represented as a greyscale plan.

Results

Through the geophysical surveys conducted during the autumn of 2025, it was possible to obtain a complete planimetric image of the fort and a substantial portion of the adjacent civil settlement. The investigation covered an area of approximately 12 hectares, encompassing in full the enclosure of the fortification and extending partially

⁵ Țentea, Matei-Popescu, Călina 2021; Țentea, Matei-Popescu, Călina 2021a; Țentea, Matei-Popescu, Călina 2022.



8. Plan of the fort and settlements from Cincșor reconstructed after geophysical prospecting in 2025

over the vicus located to its south and west. The results have provided a coherent representation of the site's internal and external organisation, allowing a more nuanced understanding of its structural evolution and spatial dynamics.

At this stage of research, the outline of the enclosure and two defensive ditches (*fossae*) can be clearly distinguished. The inner and outer *fossae* display notable differences in composition and magnetic response, which may reflect distinct construction phases or functional adaptations. The inner fossa, in particular, presents a denser anomaly pattern, suggesting the presence of considerable rubble derived from the stone curtain wall of the fort. In contrast, the outer fossa shows a more homogeneous fill, indicating a less disturbed stratigraphy.

The results enabled the delineation of all sides of the fort, whose dimensions can be estimated at approximately 130 m (East–West) by 100 m (North–South). The defensive system comprises two outer *fossae*, the inner one containing a considerable amount of lithic debris derived from the collapse of the stone enclosure. Four interruptions corresponding to gates have been identified along the perimeter, though their exact configuration remains uncertain, and no evidence of corner or curtain towers has been detected.

The orientation of the fort can be established based on the internal features revealed by the survey, which clearly outline the internal organisation of the fortification. At the centre of the enclosure, the headquarters building (*principia*) stands out as a dominant structure, forming the core of the military complex. On either side of it (in *latera praetorii*), two rectangular buildings are clearly distinguishable, bounded to the north and south by the *via principalis* and the *via quintana*. The *principia* measure approximately 37 × 35 m, proportions consistent with other auxiliary forts of similar dimensions along the Lower Danube frontier.

In the *praetentura* (to the east of the *principia*), the construction traces appear to represent rows of barracks, disposed *per scamna*, perpendicular to the *via praetoria*. Their regular spacing and alignment suggest standardised military planning typical of Roman fortifications. In the *retentura* (to the west), the structures—presumably barracks as well—seem to follow a north–south orientation, indicating a symmetrical internal layout that mirrors the eastern sector. The overall arrangement implies a well-ordered architectural scheme, reflecting the functional zoning characteristic of Roman military camps.

The *porta praetoria*, most likely oriented towards the east, is marked by an interruption in the enclosure of approximately 9.5 m in width, clearly distinguishable in the geophysical data. The *porta decumana*, situated on the opposite side, can likewise be identified as an interruption of similar dimensions.

The civil settlement (*vicus*) is clearly distinguishable on the southern side of the fort, extending as far as the edge of the present-day reservoir. In the eastern sector, its traces can be followed to the limit of the accessible area, situated along the margin of the current creek. Within this settlement, the internal structures indicate a higher density of occupation in the vicinity of the southern precinct, where a concentration of buildings and a more complex urban layout can be observed. Several alignments appear to follow the main access road leading towards *porta decumana*, suggesting a well-defined communication route between the fort and the civilian zone.

Numerous magnetic anomalies were recorded within the vicus, especially to the south and east of the fort, indicating intense construction activity and long-term occupation. In the southern area, rectangular features of considerable size and regular geometry are clearly visible, corresponding to substantial stone or timber buildings. Among these, one complex stands out by its dimensions and internal compartmentation, possibly representing the location of the bath house (*balneum*), an essential component of Roman military and civilian infrastructure.

The arrangement of the vicus in direct relation to the fort's southern and eastern sides confirms the organised and planned character of the entire complex. The orientation of its streets and buildings indicates integration within a coherent local road network, with primary and secondary routes radiating towards the gates of the fortification and connecting to the main economic and defensive points in the surrounding landscape. Such an organisation reflects the interdependence between the military garrison and its associated civilian community, typical of Roman frontier settlements along the Lower Danube.

The results of the 2025 geophysical survey provide a consistent framework for correlating geophysical data with previous archaeological investigations, refining the overall understanding of the fort and its adjacent vicus at Cincșor. The integration of these datasets has significantly improved the reconstruction of the site's planimetry, internal organisation, and topographic evolution. The identification of key architectural features — the enclosure, the dual *fossae* system, the *principia*, and the associated barrack structures — confirms the standardised nature of the fort's layout within the network of Roman military sites along the Olt valley.

Beyond their immediate interpretative value, the new results open broader perspectives on the site's role within the regional defensive system and its relationship with the civilian settlement. The clarity and precision of the data justify the continuation of systematic research, combining non-invasive methods and targeted excavation, to

further clarify construction phases, occupation dynamics, and the integration of Cincșor within the Roman frontier system of Dacia.

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Lista ilustrațiilor

1. Harta Daciei romane cu amplasarea castrului de la Cincșor
2. Cincșor, localizarea castrului tragere (după Țentea et al. 2019, 19, fig. 3.1)
3. Localizarea castrului Cincșor pe imagine satelitară Google earth 2021, resăectiv Corona 1968, (după Țentea et al. 2021, 320 fig. 7).
4. Cincșor, fotografie oblică din dronă, vedere dinspre Sud-Est (după Țentea et al. 2019, 21 fig. 3.5).
5. Cincșor, reconstituirea planului (Isac, Isac 1994, 105, fig. 2) suprapus pe modelul digital al terenului tragere (după Țentea et al. 2019, 22, fig. 3.8)
6. Rezultatete prospecțiunilor geofizice din castrul și așezarea de la Cincșor – 2025
7. Rezultatete prospecțiunilor geofizice din castrul și așezarea de la Cincșor – 2025 (fundal verde)
8. Planul castrului și așezării de la Cincșor după prospecțiunile geofizice din 2025

