

Claes Uhnér, Horia Ciugudean, Gabriel Bălan,
Raluca Burlacu-Timofte, Svend Hansen, Gabriel Rustoiu

Settlement structure and demography in Teleac: A Late Bronze Age – Early Iron Age hillfort in Transylvania

Introduction

Teleac is a large hillfort settlement situated at the edge of the large Secaşelor Plateau on the eastern side of the Mureş River valley in south-western Transylvania (Fig. 1). The hillfort's interior consists of the Gruşet Plateau and Jidovar Hill, which make up the upper northern and north-eastern sections of the site, and the north-western part of the settlement and the lower southern settlement. Several parts of Teleac's north-western section have steep and partly eroded slopes that lead down towards the lower settlement and the Mureş floodplain, whereas the southern side is demarcated by a sharp ridge facing a narrow valley leading up into the Secaşelor highlands to the east. The hillfort's steep north-western and southern sides have excellent natural defensive properties and are joined together by a 600 meter-long, well-preserved earthen rampart and a fortification ditch that run along the northern margin of the Gruşet Plateau and the north-eastern side of Jidovar Hill,¹ thereby effectively blocking the only part of the site with easy access from the outside. The western margin of the settlement is heavily eroded, but it is likely that it had a sharp and easily defended gradient. Although the substantial ditch and rampart system was a large undertaking to build, it was an economical approach to establish a well-defended area of 30 ha that took full advantage of the local geography. Yet given that the fortified area has several steep sections, it can be conservatively estimated that only about 17.5 ha were well-suited for habitation (Fig. 2).

The Teleac site was discovered in 1953,² and the first excavations were conducted in 1959–1960,³ followed by large-scale excavations between 1978

and 1987 led by a team comprising V. Vasiliev, H. Ciugudean and A.I. Aldea. The results of these campaigns were published in the monograph on the settlement in 1991.⁴ Three habitation levels were identified inside the fortification: the two older ones (I–II) are characterised by Gáva material, whereas the youngest level (III) has both Gáva and Early Basarabi material. The site was first dated to the timespan from Ha B1 to Ha C,⁵ but more recently H. Ciugudean argued that the first horizon in Teleac started already in Ha A.⁶ In 2007, H. Ciugudean and C. F. Pare (Mainz) conducted excavations at the rampart along Jidovar Hill and collected construction wood that is ¹⁴C dated to the 11th century BC. Between 2010 and 2011, the EU financed Research Training Network “Forging Identities” carried out geomagnetic prospections, metal detecting and the excavation of two small trenches.⁷ New investigations on the hillfort started in 2016 as part of the LOEWE project “Prehistoric Conflict Research – Bronze Age Fortifications between the Taunus and Carpathian Mountains”. In this article we present the results of the first year of excavations and geophysical prospection and make some initial interpretations regarding the spatial organisation and demography of the settlement, as well as the role of Teleac in a local and regional context.

Excavations in 2016

Based on information from the geomagnetic prospection of the site, together with results of previous excavations, a 10 × 10 m and a 20 × 20 m trench was opened in 2016 with the general aims

¹ Ciugudean 2012b, 107; Vasiliev *et al.* 1991, 23–32 Pl. 2–4.

² Mitrofan 1967.

³ Horedt *et al.* 1962.

⁴ Vasiliev *et al.* 1991.

⁵ Vasiliev *et al.* 1991, 102–129.

⁶ Ciugudean 2009; 2012b.

⁷ Boroffka/Ciugudean 2012.

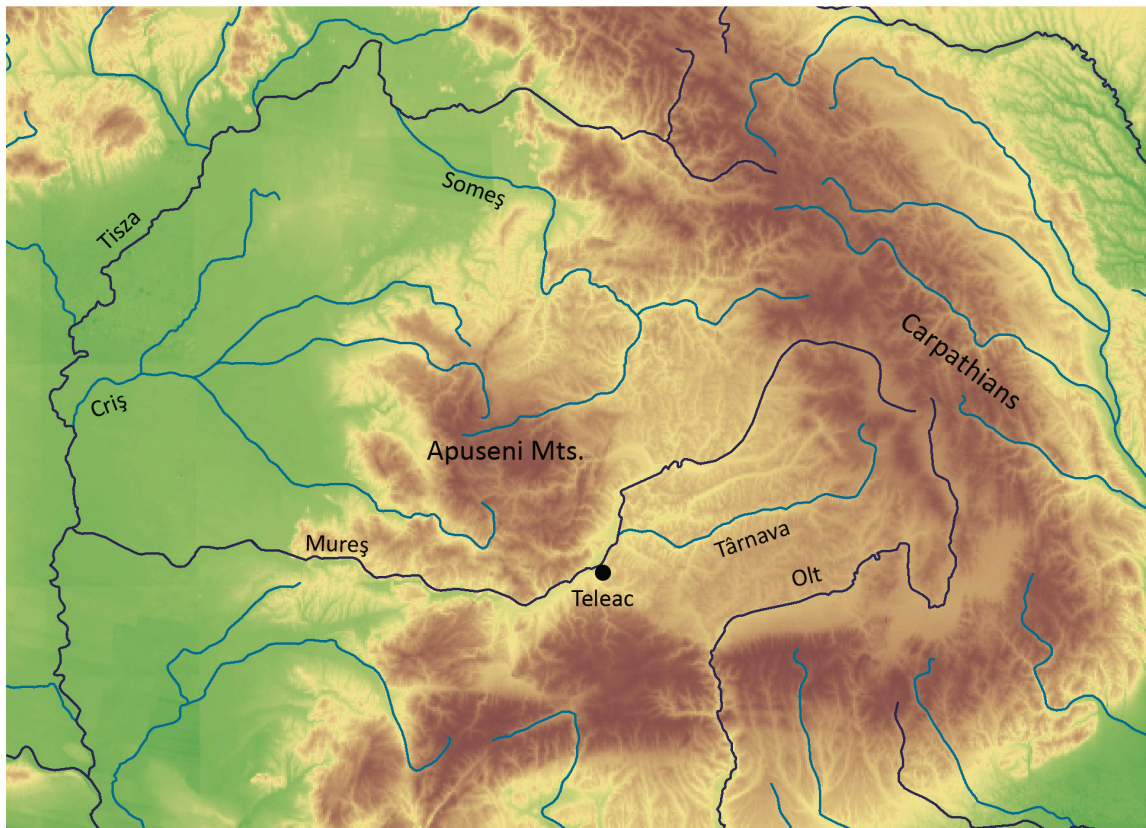


Fig. 1 Location of Teleac in south-western Transylvania (map by the authors)

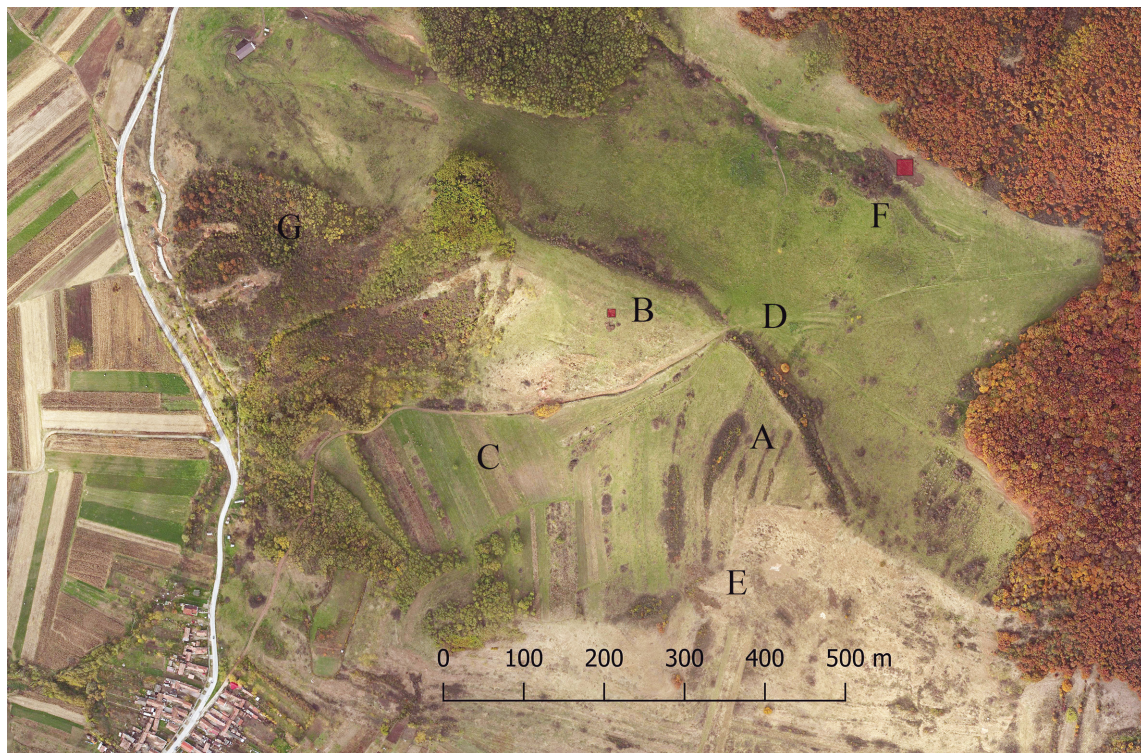


Fig. 2 Orthophoto of the Teleac hillfort. A Jidovar Hill; B Grușet Plateau; C Lower settlement; D Northern fortifications; E Southern ridge; F Areas north of the settlement; G North-western part of the settlement. The locations of the trenches excavated in 2016 are shaded in red (orthophoto by J. Kalmbach, RGK)

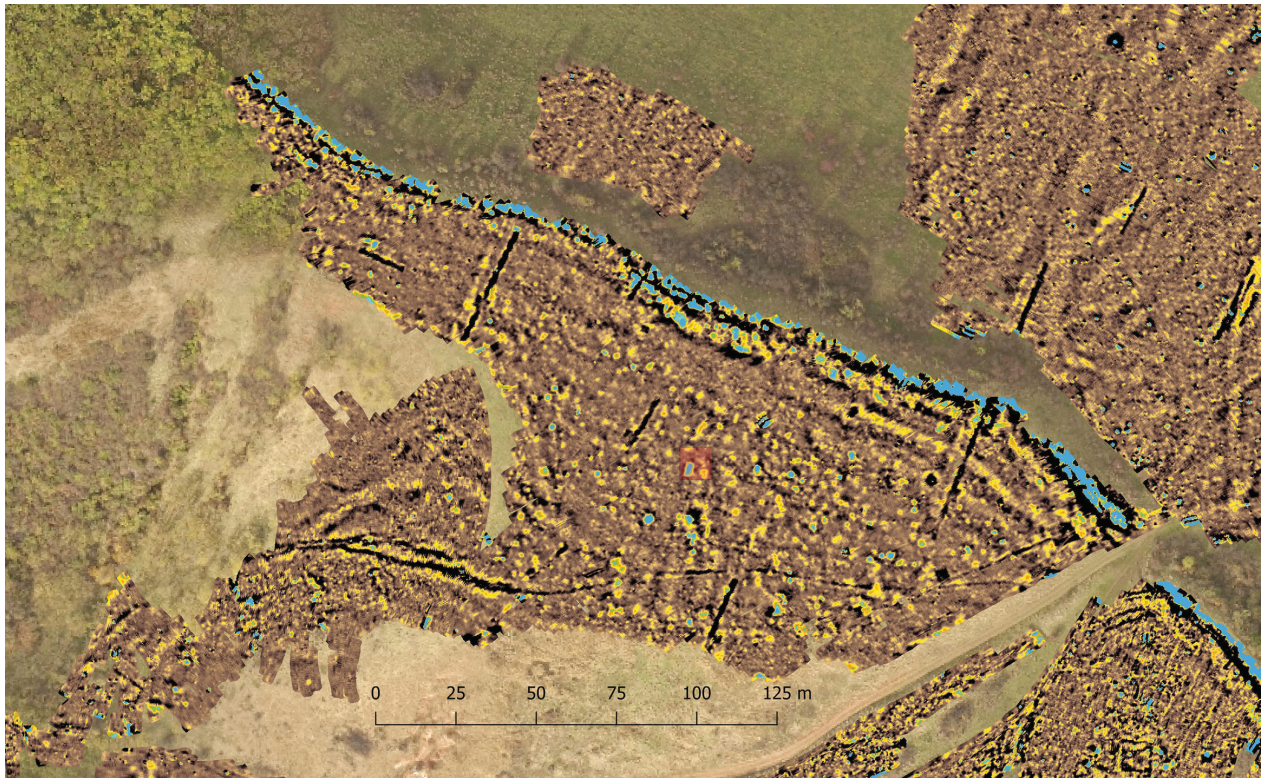


Fig. 3 Magnetogram of the Grușet Plateau and location of Trench 1 shaded in red (magnetogram by J. Kalmbach, RGK)

to investigate the internal structure and local economy of the settlement, as well as to relate the defensive works to developments in the fortified and unfortified parts of the site. The 10 × 10 m large Trench 1 is located on the Grușet Plateau, approximately 40 m south of the rampart in an area where several trenches were excavated during the 1959–1960 and 1978–1987 campaigns (Fig. 3).⁸ Due to the thick cultural layers in this part of the site, only the first two levels were excavated during the 2016 campaign. The first appeared immediately under the approximately 0.20 m thick top-soil, and level 2 began at a depth of 0.60 m. The material discovered consists of sherds, animal bones and pieces of daub belonging to the Gáva and Basarabi cultures. Both levels had a brown-greyish colour and were difficult to tell apart, although the second could be distinguished as having an ashy texture and patches of yellowish loamy soil. Two pit-buildings (A1 and A6) that correspond well with anomalies on the magnetogram were identified in level 1 together with two pits (A9 and A11). Building A1 was 2.60 × 2 m large and had a depth of 0.60 m. The material discovered inside the feature comprised potsherds, zoomorphic clay figurines, daub fragments, animal bones, a bronze pin, fragments of a

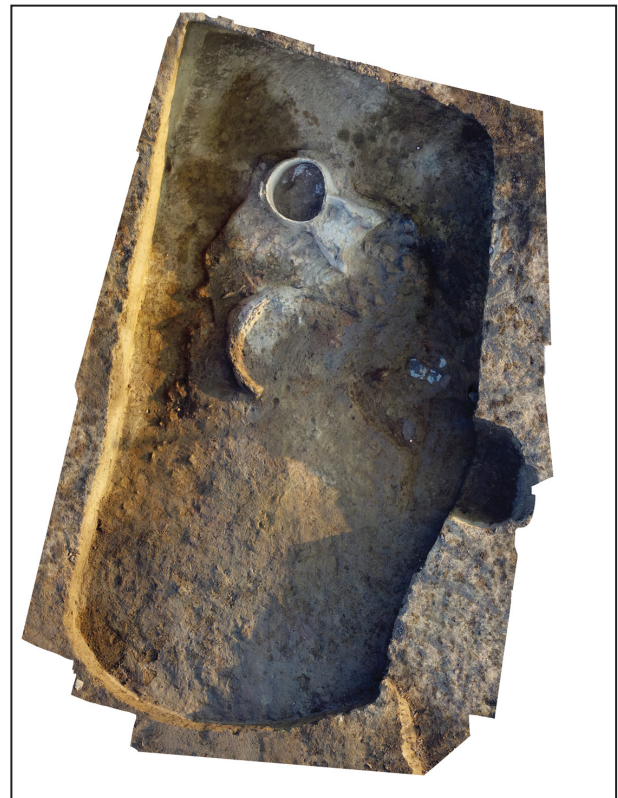


Fig. 4 Gáva culture pit-building (A6) and pottery kiln (FL6) in Trench 1 (orthophoto by K. Scheele)

⁸ Vasiliev *et al.* 1991 Pl. 1 (S.4, S.6, S.46 and S.47).



Fig. 5 Basarabi culture pit (A20) in Trench 1 (photo by the authors)

bronze link, a bronze vessel handle, and part of an iron sickle blade. The other pit-building (A6) was found in the southwestern part of the trench. The structure had a roughly north – south orientation and a length of 5.50 m and width of 3 m. The sides were defined by a medium brown, clayey soil with yellowish, silty-clayey patches and inclusions of orange daub. Besides ceramics and daub, several clay figurines, a clay miniature wheel, fragments of bronze wire, and a bronze bead were collected when excavating the building (Fig. 4). A circular pit (A20) with a diameter of 1.10 m and a depth of 0.65 m was found in the north-eastern part of the trench. Although the feature was defined at a depth of 0.40 m, it is the youngest feature found as it only contains Basarabi material (Fig. 5), comprising ceramic sherds, animal bones, and fragments of a bronze arm ring and a bronze necklace.

The second level was defined together with the remains of a destroyed hearth (A14) at a depth of 0.60 m. In addition to this hearth, the level also contained three pits (A17, A18 and A19). The finds from these pits are typical for Teleac with potsherds, daub and animal bones.

Mixed Basarabi and Gáva pottery were found in the top-soil, and in the upper 0.10 m of several features belonging to the first level. The latter situation is probably due to ploughing, although it should be noted that the Grușet Plateau has not been tilled in modern times. Every feature below

this mixed horizon, except A20, contains material of the Gáva culture. Much of the Gáva ceramics are of the emblematic type with a black exterior and a reddish or brownish interior. The majority of the sherds have polished exterior surfaces, sometimes with graphite added to the fabric to make the surface shiny. The shapes identified are biconical pots (Fig. 6,1–2. 4–5; 7,6. 9. 19. 23), bag-shaped vessels (Fig. 7,12), dishes with an everted rim (Fig. 6,3), and dishes and bowls with an inverted rim (Fig. 6,4–5. 10–11). The ornaments are of three types: grooves, incisions and plastic decorations. Grooves are rendered on the interior of the rim (Fig. 6,3; 8,15), the neck (Fig. 7,6), the upper part of the vessels (Fig. 6,2. 5; 7,6–9. 13–14. 16; 18, 21–22), and on the interior (Fig. 7,10). A herringbone pattern in two parallel rows stands out among sherds with incised decorations (Fig. 8,20). Plastic ornaments consist of knobs (Fig. 7,12. 17) and vertically applied barbotine (Fig. 7,2–3). Basarabi-style ceramics are represented by dishes and bowls with inverted rims (Fig. 8,4. 8. 21–22. 26. 28), jars (Fig. 8,12), pots (Fig. 8,3. 27. 29. 31), a cup handle (Fig. 8,24), and what might be a fruit bowl (Fig. 8,23). The ornamentation consists of grooves (Fig. 8,13. 22. 26. 28), stamped recumbent S-shapes (Fig. 8,2. 26), striped rows (Fig. 8,3. 12), and stripes and alveoli on the rims (Fig. 8,25. 27). Knobs are applied on the upper part of the vessels (Fig. 8,2. 17). There are several similar traits between Basarabi and Gáva

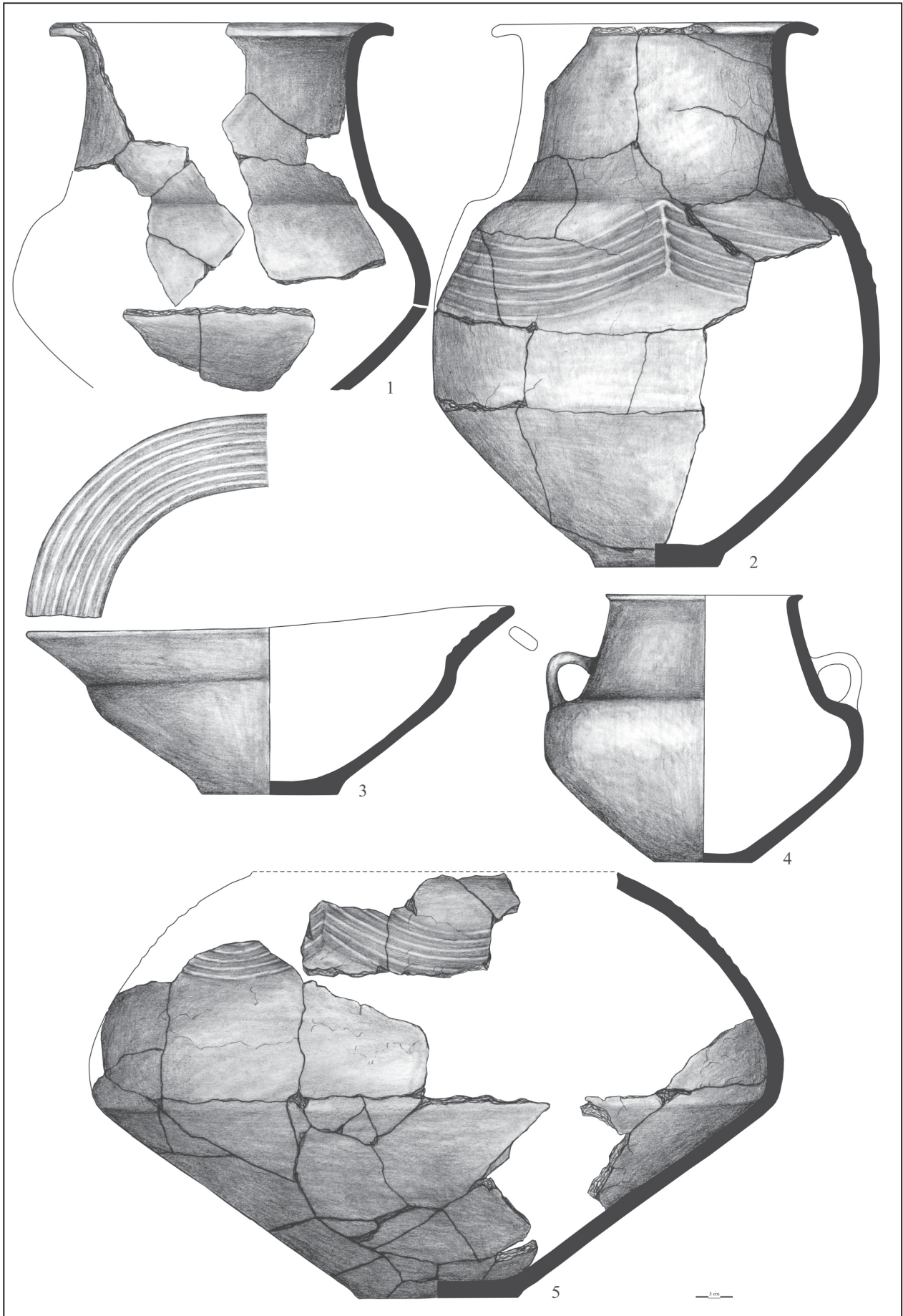


Fig. 6 Ceramics from Trench 1 (drawings by Șt. Lipot)

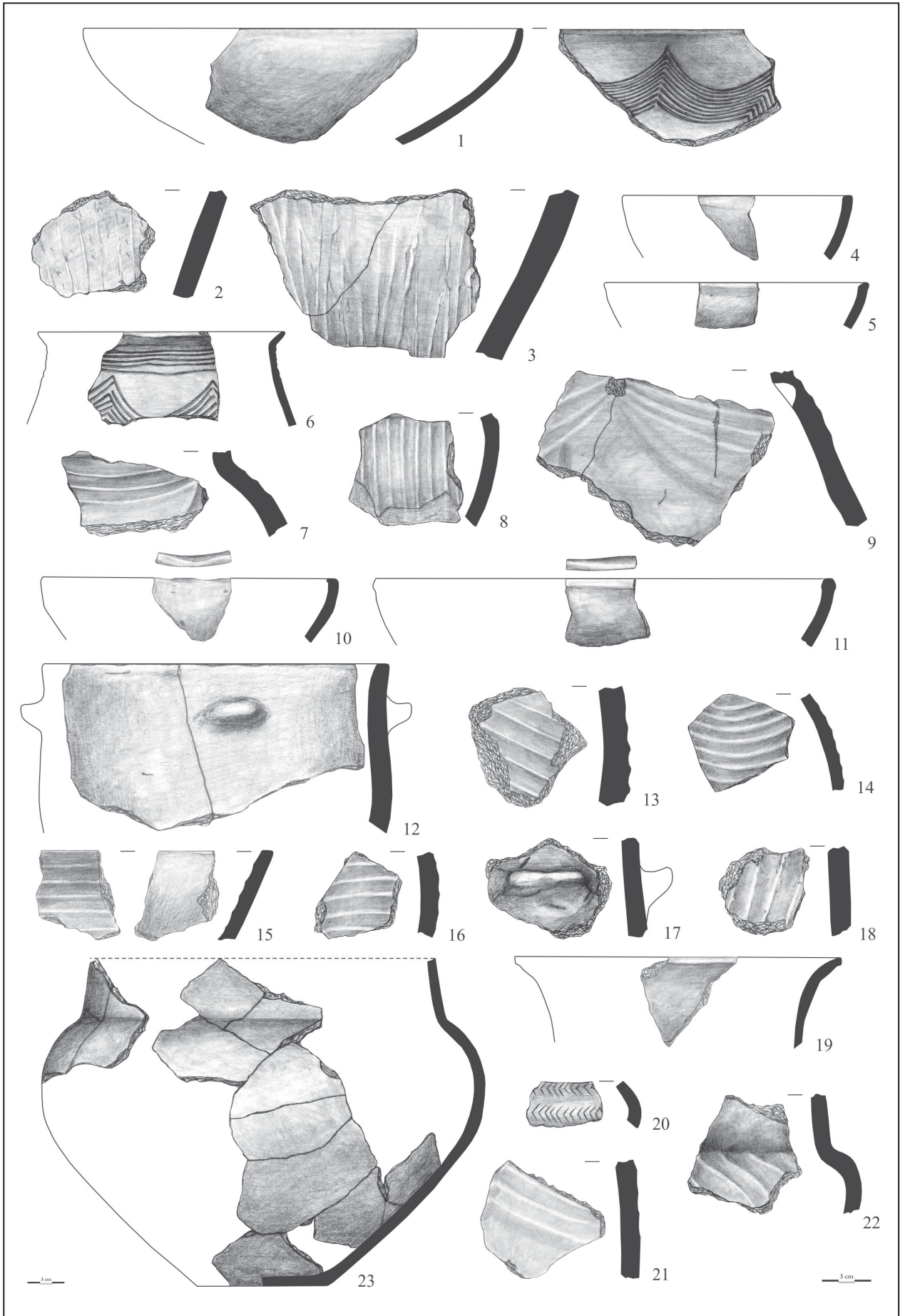


Fig. 7 Ceramics from Trench 1 (drawings by Şt. Lipot)

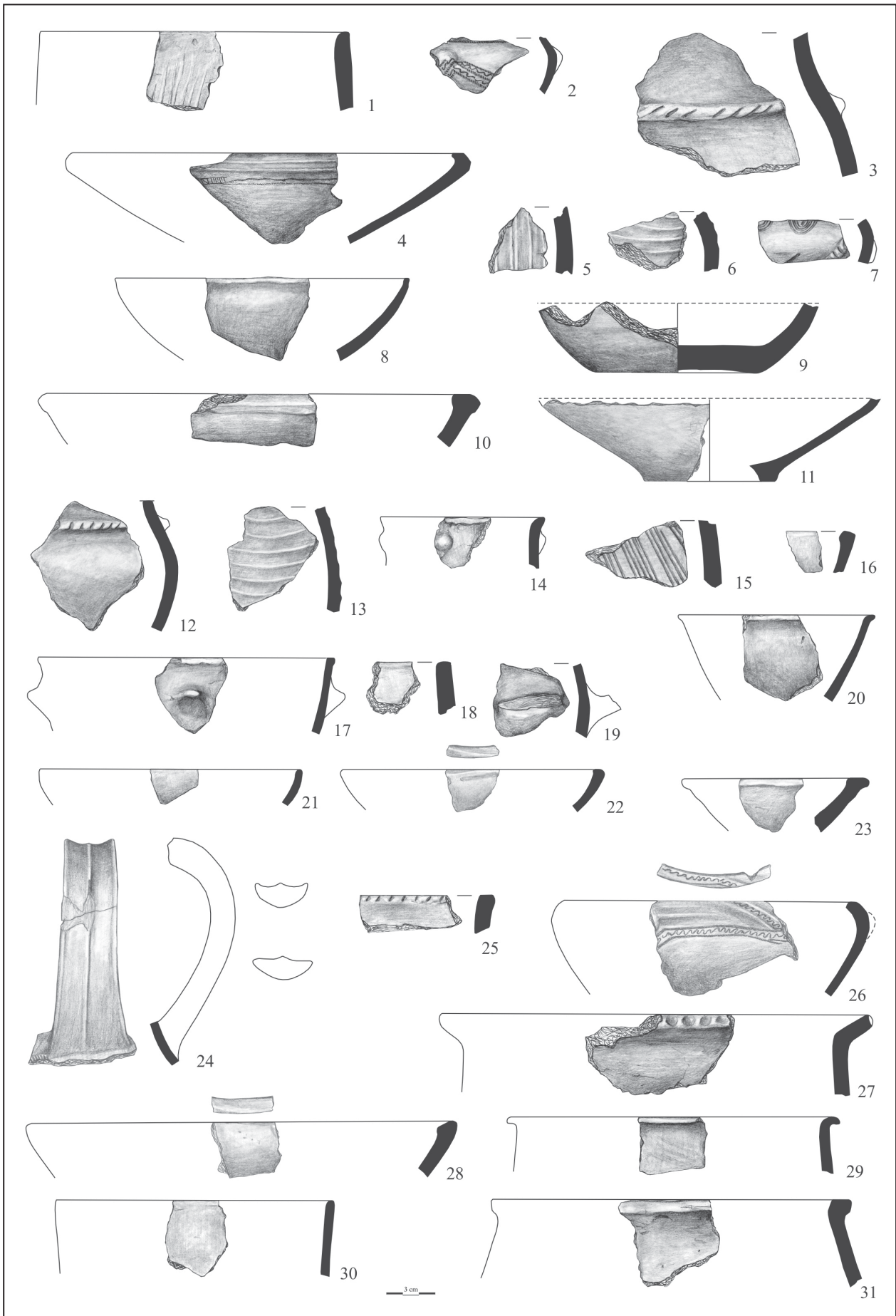


Fig. 8 Ceramics from Trench 1 (drawings by Şt. Lipot)



Fig. 9 Pottery kiln (FL6) in Trench 1 facing east (photo by the authors)

ceramics in Teleac, including the fabric with a black exterior and a red/orange/brownish interior.

The most interesting features in T1 are fire installations of various types. It is very difficult to define the exact outlines and bottom limits of the features in the top levels at Teleac, but the situation improves significantly below a depth of about 0.60 m, where distinct cultural layers appear together with well-preserved features. The fire installations described in the following were all found when excavating the two pit-buildings and pit A18. At first they were thought to belong to these features, in part because most buildings previously excavated at Teleac had hearths, usually located near one of the walls.⁹ However, after excavating these features and defining the context to which they belong, it appears that they are built on a level that continues outside the buildings and pit A18.

A13 represents the remnants of a hearth with fragments of vitrified clay and traces of ash found below pit-building A1, whereas A22 appears to be a destroyed kiln that was built on a clay floor underneath the base of pit A18. The three best preserved fire installations were located under pit-building A6. The first (FL6) is an updraft pottery kiln with a spherical firing chamber. A flat grid with round holes separated the firing chamber from the large combustion chamber – 0.5 m in diameter – underneath (Fig. 9). Collapsed wall remains from building A6 and large fragments of daub were found around the kiln, and the tip of

a bronze pin was recovered from inside the firing chamber. Another large oven (A15) of a more simple horizontal construction with ventilation holes along the bottom sides of the hemispherical superstructure were found 0.2 m south of the pottery kiln (Fig. 10). A third oven (A21), probably of the same type as A15, was located 0.2 m farther to the south. Only the base of this feature was preserved, but it could be established that it had three construction phases. All three fire installations were built on the same level, but as they are located very close to each other it is unlikely that they were in use at the same time. It is likely that A21 is the oldest of all, as its superstructure was completely destroyed. A field of debris (A16) containing daub, broken vessels, loom weights, a bone spatula and a spindle whorl were found around A21 (Fig. 11). Yet the most interesting finds are perhaps two tray fragments with traces of secondary burning for use in the ovens, and a lid to control the atmosphere during firing of ceramics in the pottery-kiln.

The pottery kiln was presumably for production of fine ware ceramics, whereas the function of the two ovens is more uncertain. Nonetheless, given the presence of several ovens and kilns close to each other in the trench, coupled with numerous ca. 1 to 2 m anomalies on the magnetogram indicative of fire installations surrounding the trench at the central and southern parts of the plateau, it seems that this area of the settlement was used for high-temperature production, which besides pottery perhaps also involved metalworking. The notion that the Grușet Plateau was used for such

⁹ Vasiliev *et al.* 1991, 40.



Fig. 10 Oven (A15) with ventilation holes along the superstructure facing south-east (photo by the authors)



Fig. 11 Debris field (A16) and ovens (A15 and A21) facing west (photo by the authors)

economic activities should not be understood that these were necessarily limited to this part of the settlement. Namely, parts of a circular oven and perforated grid pieces were found in dwelling 39 in trench 35 in the lower settlement in the 1980s.¹⁰

Evidence for metalworking in the Teleac hillfort consists mainly of tools belonging to bronze smiths; so far no solid evidence of furnaces (or kilns) for metalworking have been identified. One clay tuyere was found during the old excavations in 1959–

1960,¹¹ and no less than 11 stone moulds were discovered during the 1978–1987 excavations.¹² Three clay spoons with beaks¹³ were supposedly used in the casting process, and bronze droplets were recovered with a metal detector during the 2011 field survey. It should be noted that several stone tools, which previously were not thought to be metal-

¹⁰ Vasiliev *et al.* 1991, 40.

¹¹ Vasiliev *et al.* 1991, 49 Fig. 40,16.

¹² Vasiliev *et al.* 1991, 48–49 Fig. 23,2–10. 24,2; Ciugudean 2009 Pl. 10.

¹³ Vasiliev *et al.* 1991, 49 Fig. 40,12. 13. 15.

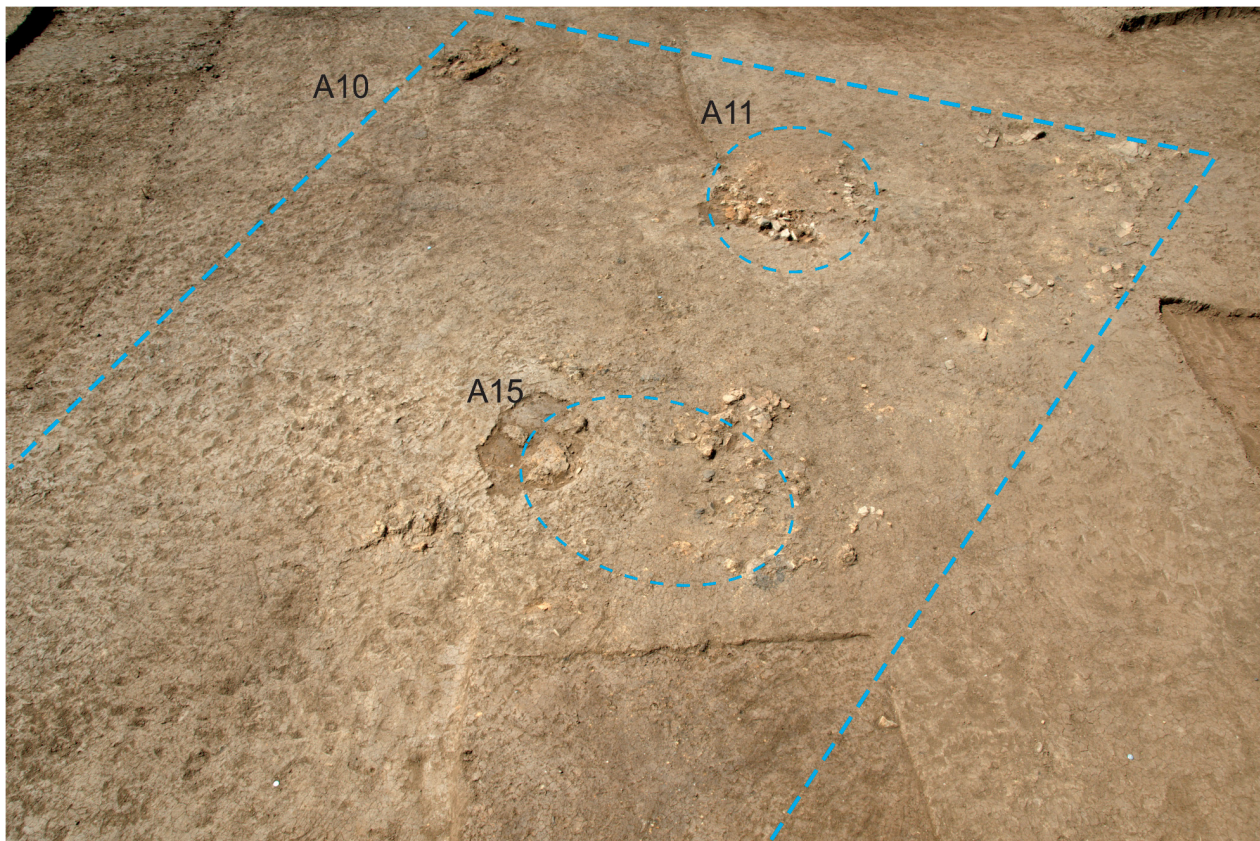


Fig. 12 Building (A10) in Trench 2, facing south-east (photo by the authors)

working equipment,¹⁴ were used as whetstones and polishing stones. However, it must be stressed that the amount of tools found in Teleac does not offer enough evidence for large-scale metalworking activities at the site. Similar to the case of ceramic production, the presence of specialist metalworkers can be inferred, but the location and the size of their workshops remain unknown.

Metalworking activities have also been documented at other Gáva sites in the vicinity of Teleac. Two crucibles and a stone mould were found at Alba Iulia-Recea,¹⁵ as well as polishing stones. The settlement belongs to the same chronological framework as Teleac, which is a good indication that metal production was in the hands of several craftsmen who practiced their craft in and around the Teleac hillfort.

Trench 2

The 20 × 20 m Trench 2 is positioned outside the hillfort, 300 m north-east of the fortification system, below a hill rising to the north and adjacent

to a gully created by a small spring (**Fig. 2**). Several trial trenches were excavated in this area during the 1980s which located some Gáva settlement features. Recent geomagnetic prospection revealed several anomalies consistent with archaeological features in the same general area. The aim of the excavation in Trench 2 was to investigate the possible presence of an open settlement contemporary with the Gáva hillfort. But the results of the excavation were not as expected, and the two habitation levels found in the trench are dated to the Early Iron Age and the Early Middle Ages.

Early Middle Age features including two pit-buildings were found under the 0.15 m thick, brown clayey top-soil. No cultural layer corresponding with this time frame could be identified, and it seems that it has been destroyed by erosion. The about 0.30 m thick Iron Age level with dark-brown clayey soil was found under a 0.20 m thick colluvium made up of yellowish-reddish clayey soil, which had accumulated from the hill and forest north of the trench. A ca. 0.30 m thick layer of light brown clayey soil with archaeological material in the upper part was found under the Iron Age level, followed by sterile soil at a depth of 0.80 to 0.95 m.

¹⁴ Vasiliev *et al.* 1991, 60 Fig. 21,13.

¹⁵ Lascu 2006, 15–16 Fig. 40–41.

The main Iron Age feature is the A10 surface building that was found at a depth of 0.60–0.65 m in the south-western trench quadrant (Fig. 12). Although parts were poorly preserved, it could be determined that the approximately 8 × 4.8 m large building was rectangular and aligned from the north-west to the south-east. The north-eastern extent of the building was well defined by a layer with large amounts of daub inside the feature, whereas the south-eastern side was delimited by the remnants of a wall (A18), or more likely a shallow ditch filled with daub. Very little cultural material was found outside this small ditch. Associated with the building are a single shallow post hole (A12), two hearths (A11 and A15, Fig. 13–14 respectively), and a beehive-shaped pit (A13) with pottery sherds and fragments of a portable hearth (Fig. 15). The architecture of the building is difficult to determine, but it is possible that it had horizontal sill or sleeper beams that lay directly upon the ground, or possibly they rested on stones that were reused for other purposes after the destruction of the building. It seems, however, that the structure was probably rebuilt once, as plaster fragments from hearth A11 were not found *in situ*, whereas much of the plaster belonging to hearth A15 was found in the original place. The location of A11 could be determined by the circular outline, 1 m in diameter, of orange-coloured burned soil. The much better preserved A15 was built with plaster on top of a 1.2 m wide base constructed of ceramic fragments from biconical vessels. Part of A15 had collapsed into the fill of a small pit. It therefore appears that hearth A11 and the small pit under A15 belongs to the first building-phase, and hearth A15 to the second phase.

Considerable amounts of pottery from largely complete vessels were found inside the building and associated Iron Age features. Among the ceramic shapes are pots (Fig. 16,1), bag-shaped vessels (Fig. 16,3, 6), bowls (Fig. 16,4), cups (Fig. 16,5) and the portable hearth (Fig. 11). The vessels have grooved ornamentation, alveoli and knobs. Distinctive, horizontally grooved ornamentation is found on the neck of a biconical vessel with a black exterior and a red interior (Fig. 16,1). Other examples are a bowl with an inverted rim and horizontal grooves on the outside rim (Fig. 16,4), and a high handled cup with diagonal grooves on the pronounced shoulder (Fig. 16,5). Oval shaped alveoli are horizontally applied on the shoulder of one bag-shaped vessel (Fig. 16,3). Bag-shaped vessels



Fig. 13 Hearth (A11) in Trench 2 facing north-east (photo by the authors)



Fig. 14 Hearth (A15) in Trench 2 facing north (photo by the authors)



Fig. 15 Pit (A13) in Trench 2 facing east (photo by the authors)

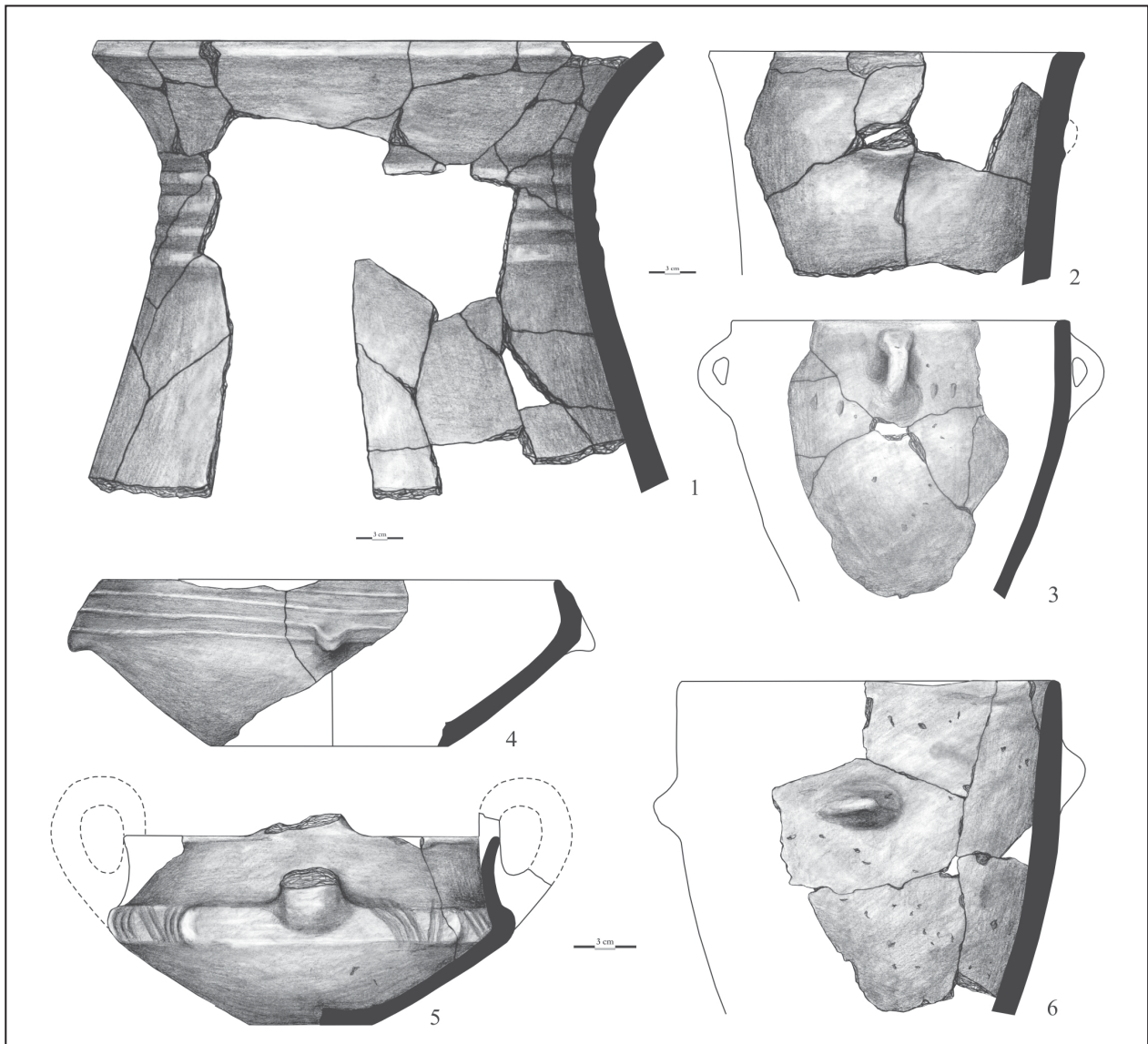


Fig. 16 Ceramics from Trench 2 (drawings by Șt. Lipot)

and bowls have shoulder knobs (Fig. 16, 2, 4, 6). Besides pottery, the Iron Age finds also comprise animal bones, spindle whorls and an iron object.

The ceramics found in Trench 2 have few parallels in the Transylvanian Early Iron Age. The bowls with inverted rims and downward-pushed knobs, decorated with horizontal grooves, are present in the late Basarabi horizon at Gheorghieni,¹⁶ at Vlahapad,¹⁷ Sântimbru¹⁸ and in Scythian cemeteries.¹⁹ The two-handled cup, decorated with vertical knobs and groups of vertical and oblique narrow grooves, has the best parallel in Remetea Mare-

type finds in the Banat region.²⁰ The biconical large pot with everted rim and horizontal grooves on the upper part of the neck has the closest parallel in Scythian cemeteries.²¹

The find assemblages from the house and nearby pits in Trench 2 should be assigned to a post-Basarabi horizon, contemporary with Scythian and so-called Vlaha-type finds. From a chronological point of view, the sequence might be placed in the 8th–7th century BC.

Similar to the situation in Trench 1, there is a high agreement between anomalies on the magnetogram (Fig. 17) and features found in Trench 2. However, given that both Iron Age and Early Medieval features were found in the trench, it is

¹⁶ Tecar/Nagy 2010 Pl. 9,1; 16,4. 7.

¹⁷ Gogâltan/Nagy 2012, 112–113 Pl. 5,2. 3.

¹⁸ Ciugudean 1996, 5 Fig. 1. 3.

¹⁹ Vasiliev 1980 Pl. 8,2. 4.

²⁰ Gumă 1993, 241–242 Pl. 100,5. 7.

²¹ Vasiliev 1980 Pl. 5–7.

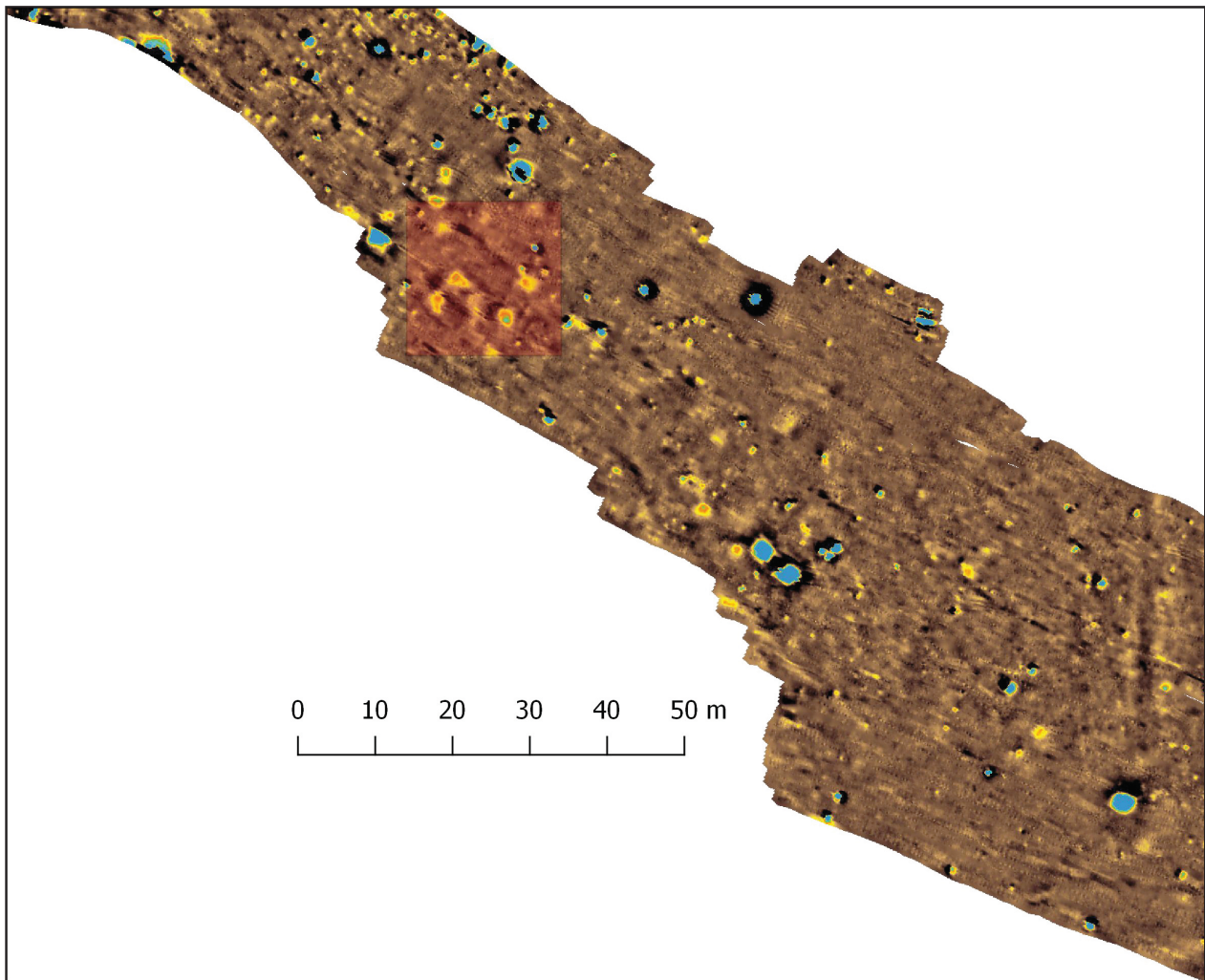


Fig. 17 Magnetogram of Trench 2 and surrounding areas. The outline of the trench is shaded in red (magnetogram by J. Kalmbach, RGK)

impossible to assess to which period anomalies recorded outside the trench can be assigned. That said, seeing that there are only scattered anomalies with nT values indicative of archaeological features surrounding the trench, it seems safe to assume that any occupation in this area was low density and probably only consisted of one or a few contemporary houses.

Open settlements around Teleac

The Teleac hillfort is situated on a narrower section of the broad Mureş Valley between the highlands of the Secaşelor Plateau to the east and the foothills of the Apuseni Mountains in the north-west (Fig. 1). The Mureş Valley has fertile agricultural soils²² and several open settlements are located on river terraces in the immediate region around

Teleac (Fig. 18–19). Alba Iulia-Recea is situated 7 km south-west of Teleac on the lower river terrace on the right side of the Mureş River.²³ It is an open settlement with a large concentration of features covering an area of about 3.6 ha, and three smaller feature concentrations 70 m and 170 m to the south, and 100 m south-west (Fig. 20). This is consistent with a fairly large, main settlement with medium density occupation, and what appears to be three outlying farmhouse clusters, and where the empty areas probably were used for agriculture. A similar situation with outlying domestic structures at a distance of 100 m and 170 m east of the 3.4 ha main settlement is found at Gâmbaş (Fig. 21). This open settlement is located on a high river terrace on the left side of the Mureş River, 28 km north-north-east of Teleac.²⁴ Surveys outside the excavated

²² Ciută 2012, 19–20.

²³ Bălan 2009, 1; Gheorghiu/Lascu 2016, 151. 158.

²⁴ Bălan *et al.* 2015, 133–139 Pl. 1–3.

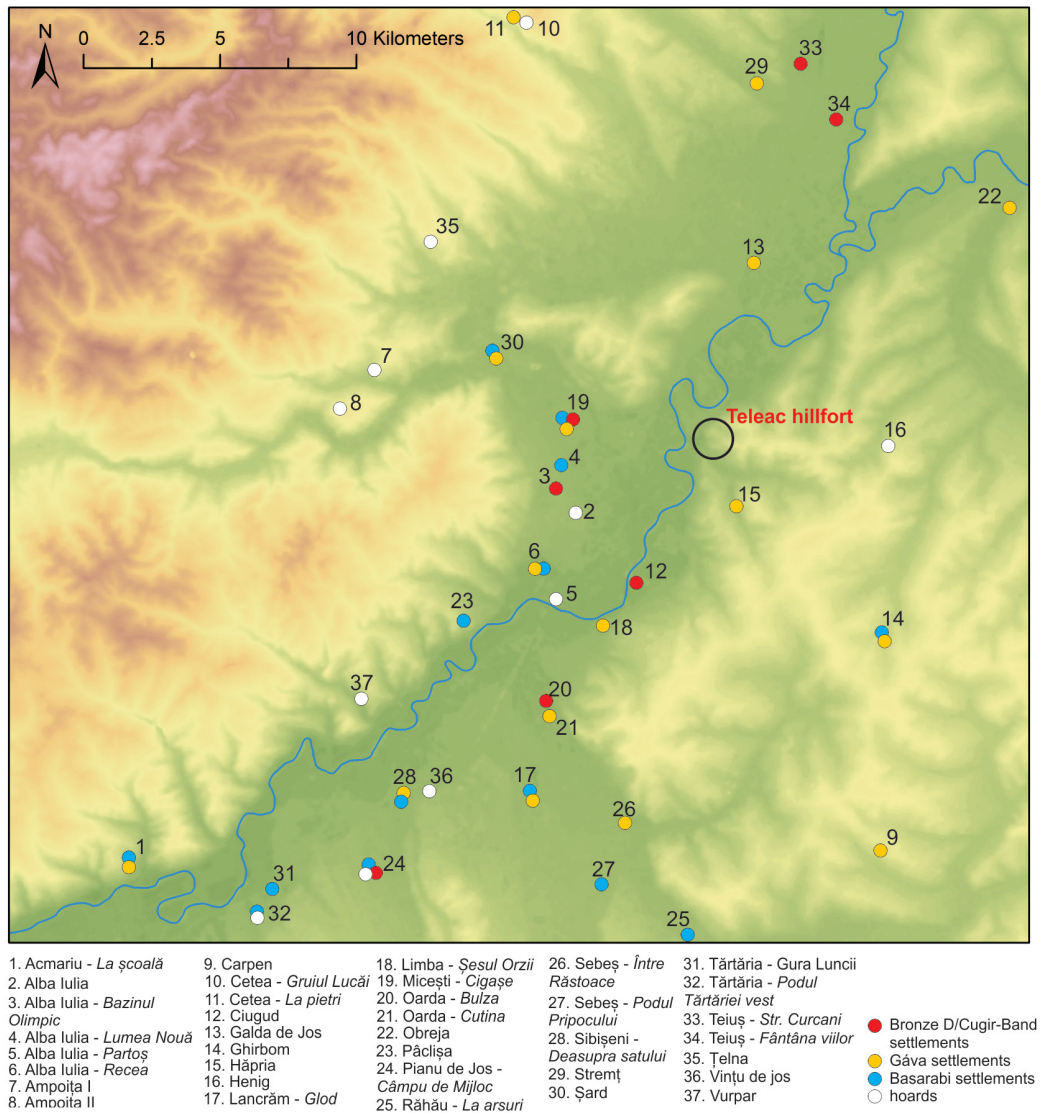


Fig. 18 Location of Teleac together with open settlements and hoards in the surrounding region (map by the authors)



Fig. 19 Location of Teleac and open settlements facing north-east. Numbering same as figure 18 (Map data: Google, DigitalGlobe)

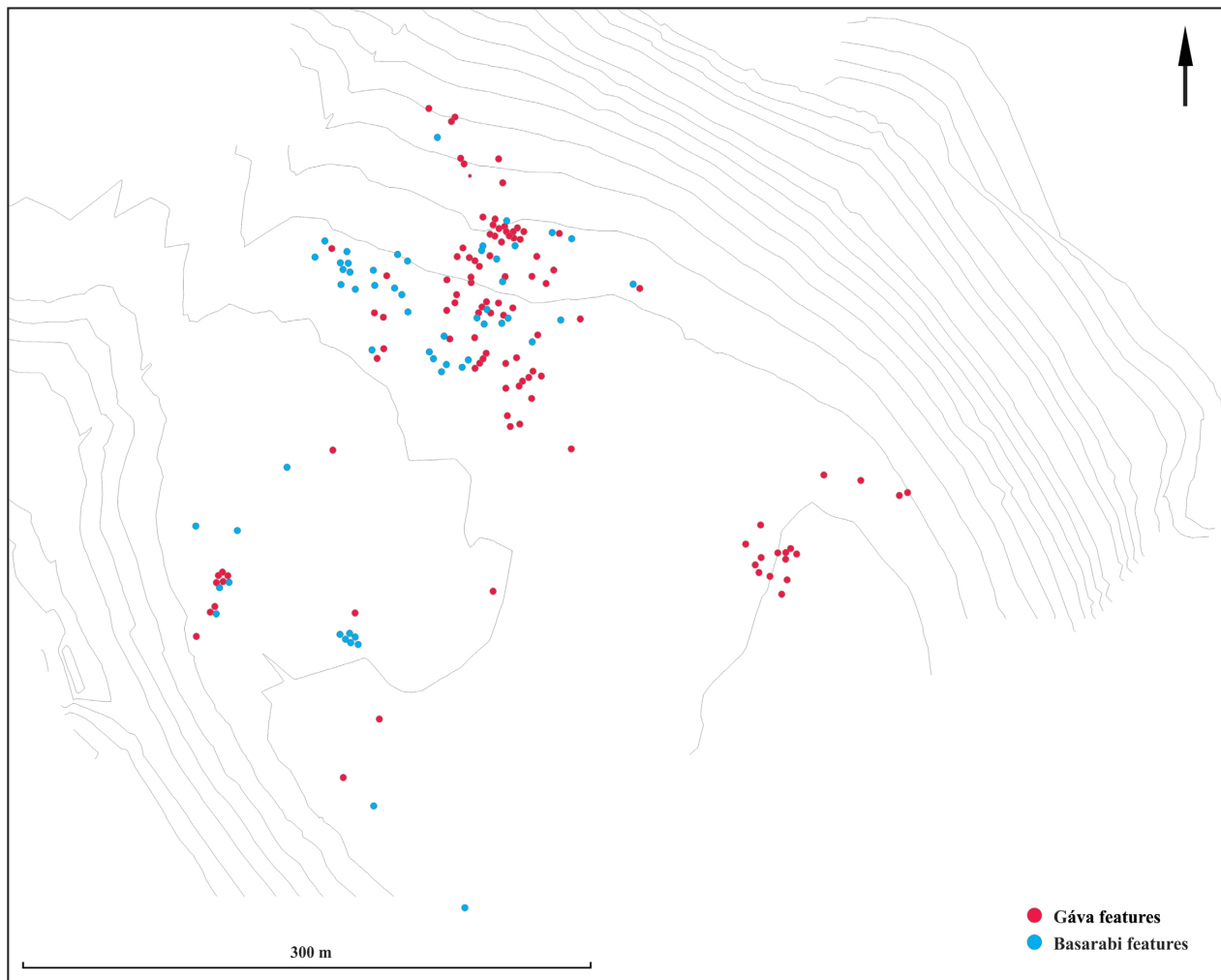


Fig. 20 Gáva and Basarabi culture features at the open settlement Alba Iulia – Recea (map by the authors)

areas indicate that the Gáva habitation extends over a large area towards the Pâgida village, and more Gáva features were excavated 650 m north-west of the main settlement. The multi-period settlement at Micești-Cișașe 5 km west of Teleac is yet another example of a main habitation area with outlying structures.²⁵

Geophysical prospection and settlement structure in Teleac

Since there is good correlation between features found during excavation and anomalies recorded on the magnetogram it is possible to understand some general aspects of the internal settlement organisation and the use of areas outside the fortification.²⁶ Jidovar Hill, which is the highest part of

the settlement, has a gently sloping lower section, three narrow terraces farther uphill, and a large flat area just under the steep hilltop. The lower hill section and areas uphill along the northern fortification system have several dense fields with magnetic anomalies indicative of intensive settlement activities. The magnetogram of the three terraces show less amounts of anomalies and that their number decreases with distance from the rampart. Interestingly, the large flat area near the top of the hill is largely empty, although the excavations in the 1980s documented up to 2 m deep cultural layers just below the hilltop.²⁷

Together with Jidovar Hill, Grușet Plateau constitutes the second part of the upper settlement in Teleac. The plateau's main section follows the northern fortification system to the north-western border of the hillfort, where the rampart turns south towards the Mureș valley. The terrain on the

²⁵ Bălan/Ota 2012, 41–42. 52–53 Pl. 2.

²⁶ Uhnér *et al.* in press.

²⁷ Vasiliev *et al.* 1991, 27 Pl. 4.

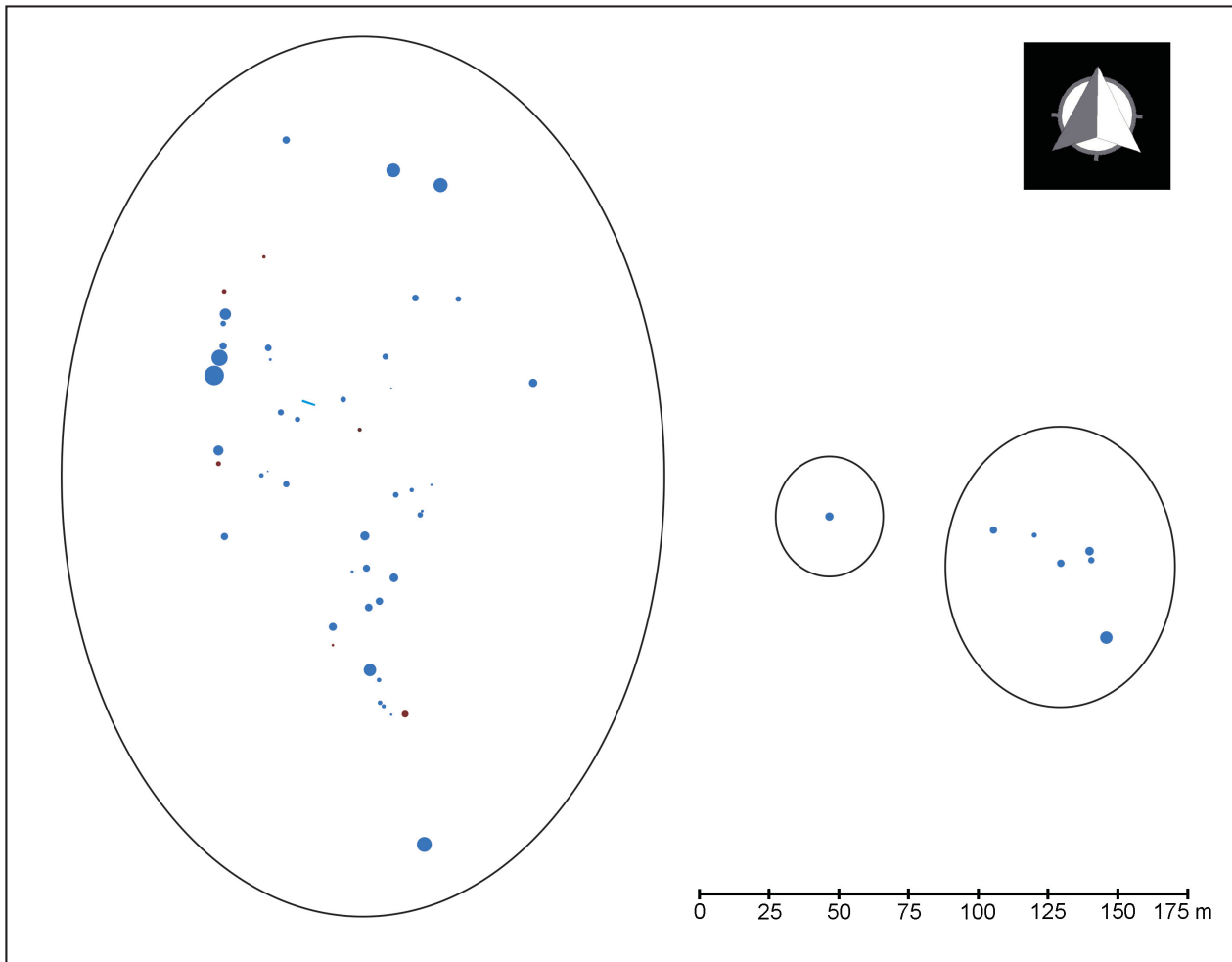


Fig. 21 The open settlement at Gâmbaş (by the authors)

plateau is flat near the rampart, followed by a gentle slope towards the south ending in a step-drop towards the lower settlement. The magnetogram of the plateau have a line of anomalies about 3 to 6 m in length, indicative of a dense concentration of buildings along a 130 m section of the rampart. The location of buildings along the inside of the defensive system is similar to the fortified settlements Andrid-Corlat²⁸ in north-western Romania, Poroszló-Aponhát,²⁹ Felsőtárkány-Várhegy³⁰ in north-eastern Hungary and Smolenice-Molpír³¹ in western Slovakia, with the difference that the latter site has stone architecture. There is a long, ca 15 m wide largely empty strip of land south of this possible row of buildings, followed by a large area covering most of the southern part of the plateau with scattered large anomalies up to 6 m in length,

and several 1 to 2 m large anomalies. A somewhat different situation has been registered at the fortified marshland Gáva site Căuș-Sighetiu, where magnetometer data show buildings close to the fortification system. However, as most surveyed sections of this low-lying site that were not subject to flooding appear to have been occupied with structures, there are no apparent concentrations along the rampart.³²

The lower settlement lies in a well-protected depression south of the Gruşet Plateau and west of Jidovar Hill. With a size of ca 10 ha it constitutes the largest area of the hillfort suitable for habitation: It was here that the magnetogram revealed three or four large concentrations of magnetic anomalies with nanotesla values (nT) ranging between 4 and 10 and sizes between 3 to 6 m (Fig. 22). These larger anomalies are clustered together with smaller anomalies of similar nT values. Comparing the magnetogram and the excavation results from the

²⁸ Kienlin/Marta 2014, 396–397 Fig. 18.

²⁹ Szabó 2004, 138–139 Pl. 9.

³⁰ Matuz 1992, 83; Metzner-Nebelsick 2012, 430.

³¹ Dušek/Dušek 1995; Stegmann-Rajtár 1998, 263–265.

³² Kienlin/Marta 2014, 385–392 Fig. 10.

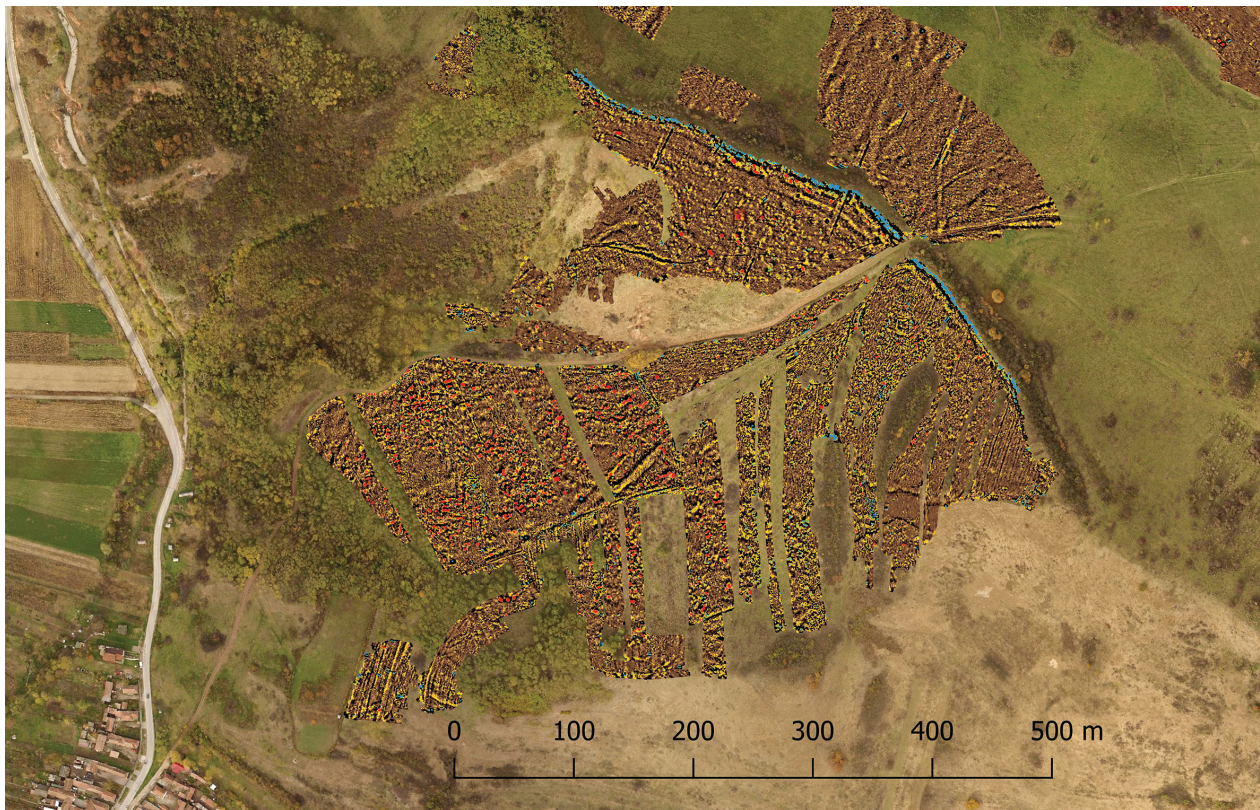


Fig. 22 Magnetogram of the Teleac hillfort with geomagnetic anomalies interpreted as pit-buildings marked in red (Magnetogram by J. Kalmbach, RGK)

10 × 10 m trench on the Grușet plateau,³³ the 3 to 6 m large anomalies are indicative of pit-buildings, whereas anomalies less than 2 m are probably various fire installations and pits. Surrounding these anomaly clusters are several mostly empty areas.

Applying the same parameters when comparing the magnetogram of Jidovar Hill and Grușet Plateau with features documented by excavation, it seems that Jidovar Hill had a dispersed pattern of pit-buildings in the lower hill section and along the rampart and on the first terrace, whereas the second and third terraces farther uphill had only isolated buildings of this type. Again, the flat terrain below the top of the hill is largely empty of anomalies. No excavations have been conducted on Jidovar Hill following the geophysical prospection considered here. Nevertheless, it is evident that there is strong agreement between magnetic anomalies and features found in the upper levels; namely, the location of features that were documented, but not excavated in a 10 × 10 m trench in the lower hill section in 2011 are clearly visible on the magnetogram.³⁴

³³ Uhnér *et al.* in press.

³⁴ cf. Uhnér in press.

Grușet Plateau had as already mentioned a row of anomalies adjoining the rampart. Comparing the nT values and excavation results it appears that they constitute pit-buildings, whilst the southern and central plateau only had scattered buildings of this type. Surrounding these pit-buildings are several 1 to 2 m large features, which basing on data from the excavations in the 1970s and 1980s, and on the pottery kiln and other fire installations in the 10 × 10 m trench excavated in the same area in 2016, indicate that this area was used for high-temperature production activities, such as making pottery and perhaps metalworking.

The magnetogram of areas inside the hillfort stands in strong contrast to the surveyed areas immediately outside of the northern fortification system. The latter areas are largely empty, and signs of habitation first appear beside a small gully 300 m north of the rampart. Several of the anomalies recorded north of the gully were excavated in 2016; similar to inside the hillfort the excavation results are in high agreement with the magnetogram.

When comparing data from recent excavations with the magnetogram of the same areas, it seems that the recorded anomalies typically correspond with features from the uppermost archaeological

levels at the site. Since preserved Basarabi features from the latest known actual occupation of the hillfort are rare, this seems to imply that most anomalies belong to the late Gáva phase.³⁵ It cannot be expected, however, that these anomalies are contemporary in a strict sense, but it is at least possible to tentatively understand some general aspects of Teleac's internal settlement structure during late Gáva times.

The magnetogram reveals a fairly diverse picture of the use of space in Teleac. The lower settlement, with its large groups of pit-buildings appears to have had the densest occupation. This would make sense as it was the best weather-protected area of the hillfort and situated close to the Mureş River, which probably was the settlement's only all-season water source. Interestingly, although Jidovar Hill had both the earliest fortification and formed a separate enclosed part of the defensive system,³⁶ it only had a dispersed pattern of pit-buildings in the lower hill-section and along the rampart farther uphill. However, it should be noted that the same areas have large amounts of smaller anomalies that probably correspond with pits, ceramic concentrations and various fire installations. The situation on the Gruşet Plateau is again different with a row of buildings along the fortification system, separated by a largely empty strip of land from a large area with scattered pit-buildings and what appears to be several ovens and kilns. The location of an area for high-temperature production on the Gruşet Plateau, away from Jidovar Hill and above the densely populated lower settlement, would make sense, as it limited the risk of accidents and kept smoke away from most residential areas. Perhaps it also made logistical sense inasmuch as firewood could be brought in from the hills outside the northern fortifications. Although only parts of the areas immediately outside the northern fortification system have been surveyed thus far, they are largely empty of anomalies and there are no indications of occupation. Yet, that this area apparently was kept open underscores that the substantial ditch and rampart system was not just for show, for it denied potential attackers the use of cover during an assault. Taken together, it seems that Teleac was a spatially well organised settlement, where various areas were used for different activities.

³⁵ Ciugudean 2012b; Uhnér in press; Vasiliev *et al.* 1991.

³⁶ Ciugudean 2012b, 107. 112–113; Vasiliev *et al.* 1991, 27 Pl. 3, 4.

Demography

The magnetogram makes evident that most parts with suitable terrain at the hillfort were put to use. But how large was the population in Teleac? Analysing prehistoric demography is a difficult undertaking, and the explanatory models used are fraught with problems as they are necessarily built upon theoretical assumptions that outweigh known archaeological data.³⁷ One approach to estimate the size of prehistoric populations is to examine various aspects of habitation space and make analogies with ethnographic data.³⁸ The first population estimate made in the 1980s for the last phase of occupation in Teleac was of 2500 to 3000 people. It was based on the number of excavated houses in an area that represented approximately one-half of one percent of the total area of the hillfort, which was multiplied with the total area thought to have been occupied (85 percent of the 30 ha).³⁹

The geophysical prospection of the site provides better data on which to base population estimations. However, one problem is that the best information derives from pit-buildings. Various societies have different proxemics systems that are related to cultural, environmental and economic conditions, just to name a few, but the limited floor areas render these small pit-structures unsuitable as family dwellings, given that one person typically requires at least between 6 and 10 m² of living space.⁴⁰ In view of the small size of the pit-buildings it is therefore likely that the inhabitants of Teleac lived in surface houses, but these types of buildings are usually poorly preserved in Teleac. They comprise ca 7 to 12 m² accumulations of wattle and daub mixed with charcoal;⁴¹ very little is known about their architecture and actual size. Sections of the partly preserved house in Trench 2 were visible on the magnetogram, but thus far it has been difficult to identify surface buildings using geophysics inside the hillfort. Therefore, population estimations must be based on other criteria than actual living space.

Assuming that the magnetogram roughly describes the late Gáva phase in Teleac, which again is likely based on comparisons of recent excava-

³⁷ Kowalewski 2003; Sbonias 1999; Zimmermann 1996.

³⁸ Hassan 1978, 55–59; Plog 1978, 87–88; Schacht 1981, 124–131.

³⁹ Vasiliev *et al.* 1991, 156–157

⁴⁰ Casselberry 1974, 119; Naroll 1962, 588.

⁴¹ Vasiliev *et al.* 1991, 38.

tion results and magnetic anomalies, it is possible to use our understanding of the internal settlement structure to make a rough assessment of the number of inhabitants and how the population was distributed at this time in the history of the settlement. The lower settlement had about 10 ha of land that was suitable for habitation. Further, basing on the large groups of anomaly concentrations indicative of intensive settlement activities, it seems reasonable that this area had a high occupation density with 12 houses per ha.⁴² Most areas of the ca 3 ha large Jidovar Hill have similar high concentrations of magnetic anomalies like the lower settlement, but since the top of the hill and the southern parts of the terraces are essentially empty it can be estimated that this part of the hillfort had a somewhat lower density of occupation with 10 houses per ha. The Grușet Plateau had very high occupation densities along the eastern rampart section and in the north-western corner of the plateau. These two sections cover an area of about 1 ha and had approximately 15 houses. Apart from the empty stretch of land separating the lower section of the plateau from the occupation by the rampart, the remaining 1.5 ha plateau appears to have been used mainly for economic activities and had a dispersed occupation of 6 houses per ha. The north-western part of the hillfort has several sections with a steep terrain covered by a dense forest. This part has not been surveyed with a magnetometer, but basing on the excavations in the area in the 1980s, it is thought that 2 ha had high to medium density occupation with perhaps 10 houses per ha. Thus far there is no evidence of habitation directly outside the fortifications, and it seems that the absolute majority of the population lived inside the fortified area.

Although little is known about the architecture of Gáva houses, they seem to have been of limited size and therefore suited for one household. Based on historical data and ethnographic observations of sedentary agricultural societies, it is likely that a typical household consisted of six persons and that at least one-third of the population were children or sub-adults.⁴³ This would mean that the later Gáva population in Teleac comprised about 1200 persons, of which 720 lived in the lower settlement, 180 on Jidovar Hill, 150 on Grușet Plateau and

perhaps 120 at the north-western part of the hillfort. Given that Teleac is a walled settlement and that several parts of the western section facing the Mureș Valley are eroded, these estimates are likely conservative. Although they only describe the later Gáva occupation, the up to 2 m thick cultural layers at the site reveal long term, intensive settlement activities and are strong indications that Teleac had a substantial population during most of its history.

Considering that several open settlements around Teleac had what appear to be fairly large areas with medium to high density occupation and attached outlying farmhouses, it is possible to make an initial rough estimation of the region's demography. Using the same methodology as above and assuming that the high density of features in the 3.6 ha main settlement at Alba Iulia-Recea is indicative of 10 houses per ha and perhaps 7 outlying farmhouses, the settlement would have had 43 houses and a population of circa 250 persons. However, Alba Iulia-Recea was a large open settlement and as such not representative for the other 15 known Gáva sites in the region. Using a fairly high median value of 160 persons for these sites to make up for the likelihood that not all settlements are known would mean that the region had a population of about 3900 persons in Gáva times, of which 30 percent lived in the Teleac hillfort. It should again be emphasized that these numbers are rough estimates, and further investigations are needed to refine the models.

Discussion

Teleac occupies a strategic position overlooking the broad Mureș Valley, which is a natural communication line in a region that is rich in mineral resources. The Transylvanian Plateau that expands east of Teleac has rich salt sources⁴⁴ and the surrounding Carpathian and Apuseni mountains have copper ores and numerous deposits of silver and gold.⁴⁵ Overland movement in the immediate region around Teleac is restricted by a network of hills and valleys and by the southern arc of the Carpathians and the Apuseni Mountains farther afield. This topographical situation created a bottleneck

⁴² cf. Earle/Kolb 2010, 71.

⁴³ cf. Chamberlain 2006, 52. 64–67; Sørensen 2010, 126 Tab. 5.2; Zorn 1994, 33 Tab. 1.

⁴⁴ Boroffka 2009, 128–129; Bukowski 2013, 33; Harding 2013, 89–90.

⁴⁵ Boroffka 2009, 126–128; Ciugudean 2012a; Stos-Gale 2014, 198–199 Fig. 18.

around Teleac for transportation and trade between southwestern Transylvania and regions in the west. Although there at present is no conclusive evidence that Teleac was involved in salt and metal trade, the hillfort's location offered excellent opportunities to do so, and the large size of the settlement as well as the substantial fortifications are persuasive indications of prosperity that make it likely that Teleac was an important trade and transportation hub.

At present, the subsistence economy in Teleac can only be described in general terms. The osteological material that was collected in the 1970s and 1980s was mostly of cattle, followed by domestic pig and sheep. Hunting placed only a lesser role in subsistence.⁴⁶ Since the great majority of the fortified area with gentle terrain was used for habitation, it appears that there was limited ability to stall animals in the settlement. The archaeobotanical material from the 2016 excavations is dominated by broomcorn millet, which was found in every sampled Gáva context, followed by einkorn and spelt wheat, and lesser amounts of emmer and rye. Small amounts of horse bean and green pea were also found, as well as ruderal grasses, which are common in fields used for cereal cultivation. Data from other sites in Transylvania and the Carpathian Basin provide a similar picture of fairly advanced agricultural practices based on livestock rearing in combination with a high level of plant cultivation.⁴⁷ Yet given the large subsistence requirements of the population in Teleac, which would necessitate a large catchment area, it may have been difficult for the settlement to be self-sufficient in staple food, and it seems likely that the hillfort must have had close economic relations with surrounding open settlements.

Teleac's substantial fortification system and strategic position, coupled with what appears to have been a close association with the surrounding open settlements in the Mureş Valley, suggests that the hillfort was a military stronghold that both dominated and was supported by the local surroundings.⁴⁸ At present it is difficult to assess how large an area Teleac might have commanded, but given the size and considerable population of the hillfort in relation to open settlements, it seems likely that the area encompassed at least

several kilometres to the north and south in the Mureş Valley, besides areas in the hilly hinterland to the east of Teleac.

Judging from the settlement pattern (**Fig. 18**), there was a marked shift from Cugir-Band to the Gáva period. Only the Miceşti-Cigaşe site has Cugir-Band and Gáva occupation, and there was a marked increase in settlement density from seven Cugir-Band sites to fifteen open Gáva settlements, of which eight also were settled during the Basarabi phase. The densely occupied landscape and the in part continued use of the same settlements over at least a couple hundred years indicate that the local economic and political relationships, in which the hillfort must have played a principal role were quite stable.

The discovery of Iron Age occupation in Trench 2 sheds some new light on the history of Teleac and the region. There is a striking difference between the hillfort settlement and the following occupation nearby on the Secaşelor Plateau. The hillfort occupies a prominent position that is visible from far away in the Mureş Valley. Such conspicuous locations of fortified settlements are strong symbolic expressions of ownership over a territory and its resources, and a readiness to use force to defend the own interests.⁴⁹ This is contrasted by the later, much smaller occupation that was defensively hidden from view behind the hillfort and surrounding hills.⁵⁰ Teleac's northern rampart and fortification ditches are still prominent features in the local landscape, and the subsequent Iron Age settlers must have been aware of the hillfort. Indeed, it is likely they had knowledge of its previously prominent role. Yet, there are no indications that efforts were made to re-populate the strategically located hillfort, a situation which should be interpreted as the complete breakdown and realignment of the local political and economic system.

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⁴⁶ Vasiliev *et al.* 1991, 162.

⁴⁷ Benecke 1998, 62–66 Fig. 3; Boroffka 2005, 127–130; Bökönyi 1974, 73; Ciută 2012, 55–56.

⁴⁸ cf. Keegan 2004, 139–140.

⁴⁹ Earle 2017, 9.

⁵⁰ cf. Rowlands 1972, 455.

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Claes Uhnér, Horia Ciugudean, Gabriel Bălan, Raluca Burlacu-Timofte, Svend Hansen, Gabriel Rustoiu, Settlement structure and demography in Teleac: A Late Bronze Age – Early Iron Age hillfort in Transylvania

Recent investigations at the Teleac hillfort in south-western Transylvania have generated new data on the spatial organisation and history of the settlement. A combination of excavations and geophysical prospection revealed that Teleac was a dense and well organised settlement with a substantial population, and that some sections of the hillfort likely were used for different activities. It is also argued that Teleac likely dominated the open settlements and acted as a hub for transportation and trade throughout the region.

Claes Uhnér, Horia Ciugudean, Gabriel Bălan, Raluca Burlacu-Timofte, Svend Hansen, Gabriel Rustoiu, Siedlungsstruktur und Demographie in Teleac: eine spätbronzezeitliche – früheisenzeitliche Befestigung in Siebenbürgen

Jüngste Untersuchungen in der befestigten Höhensiedlung von Teleac im südwestlichen Siebenbürgen haben neue Daten zur räumlichen Organisation und Siedlungsgeschichte erbracht. Ausgrabungen in Kombination mit geophysikalischer Prospektion konnten zeigen, dass Teleac eine dichte und gut organisierte Siedlung mit einer erheblichen Bevölkerung war und dass einige Bereiche der befestigten Höhensiedlung für unterschiedliche Aktivitäten genutzt wurden. Es wird auch argumentiert, dass Teleac wahrscheinlich die offenen Siedlungen beherrschte und als Drehkreuz für Transport und Handel in der Region fungierte.