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## The Gumelnița culture settlements in the Prut-Dniester Rivers area, in light of old and new research from Taraclia I (Republic of Moldova)

### Abstract

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The discovery of the first Gumelnița Culture settlements in the region between the Prut and the Dniester Rivers dates back to the 1960s and 1970s. Currently, thirty three settlements of this culture are known in the territory of Ukraine and Moldova. One of them, representing the Stoicani-Aldeni of Gumelnița Culture variant, is located in Taraclia (Taraclia district, Republic of Moldova). It has been excavated since 1979. In the spring of 2018, magnetic research was carried out on the site. They revealed the presence of a fortification system surrounding an area of approximately 1.7 hectares. It consisted of two parallel ditches forming a quadrangular arrangement. Similar fortifications have been discovered on sites belonging to the Gumelnița-Kodjadermen-Karanovo VI cultural complex, located in the South-Eastern European region.

**Key words:** Eneolithic, Gumelnița-Kodjadermen-Karanovo VI cultural complex, Gumelnița culture, enclosure, fortified settlement

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### Short history of the research on the Gumelnița settlements from the Bugeac steppe

The Eneolithic in the region between the Prut and the Dniester Rivers has long been associated only with the Precucuteni-Cucuteni-Trypillia cultural complex. The first eponymous settlement found, the one near Bolgrad, was originally interpreted as Trypillian. It was discovered in 1960 by I.T. Chernyakov, while in 1962 the first results of the investigations were published. The author classified the ceramic fragments discovered into two categories. The first category mistakenly indicates analogies to the Luka Vrublevetskaya ceramic material, which could be chronologically framed within the early stage of the first Trypillian culture. With regard to the second category, the author stated that the

discovered ceramics could be considered as belonging to the Gumelnița culture (Chernyakov 1962, 141).

Right about the time of these great discoveries, the Moldavian archaeological expedition of the Institute of Archaeology of the Academy of Sciences of the USSR, led by T. S. Passek, learnt about the existence of this site from the author of this discovery himself, I.T. Chernyakov. This expedition, which aimed at identifying the Trypillian sites in the steppe zone and, most importantly, at establishing their southern boundary, undertook the first surface studies on this archaeological site in 1961 (Passek and Chernysh 1965, 6).

The discovery of the first Gumelnița settlements in the area under scrutiny dates back to the 1960s and 1970s. T. S. Passek and E. K. Chernysh noticed a similarity between these sites and the settlements of the early Gumelnița culture in north-eastern Romania (Aldeni

II cultural aspect). Both researchers considered all the Gumelnița settlements found in Romania, Bulgaria and south-western USSR to be a unique cultural complex, highlighting several variants and local aspects (Passek and Chernysh 1965; Passek 1965, 8–9; Passek and Titov 1966, 75–77). The newly discovered sites have been included in the Aldeni II cultural unit (Comșa 1963, 8–9).

S. N. Bibikov, upon analysing the stratigraphy of the Bolgrad settlement, recorded two cultural layers that differed in terms of material culture and an existence of two types of dwellings, pit-houses and overground dwellings. He also proposed a chronology of the sites: Bolgrad I and Bolgrad II, including the sites in a separate archaeological culture, and later insisting on the idea of a regional variant of the Gumelnița culture (Bibikov 1971, 210–213; Bibikov and Subbotin 1986, 263–268). L. Subbotin argues that the Gumelnița sites in southern Bessarabia are a part of a particular local cultural unit (Bolgrad), which is individualised (Subbotin 1978, 36).

V.S. Bejlekchi was a coordinator of archaeological excavations at the sites Vulcănești II and Lopățică. The first monograph dedicated exclusively to the Eneolithic sites from the mouths of the Danube and the Prut Rivers enclosed the sites identified as Aldeni II, a local variant of the Gumelnița culture (Bejlekchi 1978, 16).

In the same period, academic works that addressed a narrower but more specific aspect of the Gumelnița culture, namely overground dwellings, (Chernysh 1965) or tools (Chernysh 1969) were published. Scientific papers were also released on the geological origins of raw materials that were used for tool production (Petrin 1967), as well as articles on fauna remains discovered at the settlements (Tsalkin 1967). An important and well-researched aspect of the Gumelnița culture from the northern region of the Lower Danube River is represented by anthropomorphic figurines (Besfamil'naya 1966; Passek and Gerasimov 1967, 38–42).

H. Todorova insisted that the settlements in this area should be counted into the Bolgrad variant of the Varna culture (Todorova 1979, 70). This concept was proposed and supported by Bulgarian researchers for the most part.

In the 1980s, new Gumelnița sites were discovered. The excavations were continued in the Nagornoe II site by N. N. Skakun (Skakun 1985, 354–355; Skakun 1987, 413; Skakun 1994, 58–68; Skakun, Steganceva 1994, 23–26). Also, a settlement in Taraclia was discovered and excavated, delivering new findings that were presented to the public (Mishina and Chirkov 1986, 385).

V. G. Zbenovich argued that the Bolgrad-Aldeni group represented an early manifestation of the Gumelnița complex (Zbenovich 1976, 79–92). E. K. Chernysh considered the Bolgrad-Aldeni to be a cultural unit as-

sociated with the Gumelnița complex, highlighting the Bolgrad and Aldeni variants (Chernysh 1982, 253).

L. V. Subbotin concluded that this new group of archaeological monuments can be regarded as a local Bolgrad variant of the Gumelnița culture (Subbotin 1983, 136), related to the Stoicani-Aldeni or Aldeni II (Subbotin 2013, 110). He proposed a chronological framework of the sites in the studied area, within which he distinguished successive colonisation stages of the area under scrutiny, identifying the earliest and the latest settlements established by new populations on the right bank of the Prut and the Danube Rivers (Subbotin 1983, 120).

I. T. Dragomir classified the Bolgrad group into the cultural variant of the Stoicani-Aldeni II (Dragomir 1983, 10–17). The theory according to which the group of Bolgrad settlements was supposed to belong to the Varna culture was abandoned (Șimon 1983, 305–319). The settlements in the area in question were analysed in the context of the Bulgarian Neolithic and Eneolithic cultures (Mikov 1985, 47–55).

V. I. Sorokin performed an analysis of the bibliographic sources and archaeological materials, following the idea of the Bolgrad-Aldeni culture (Sorokin 1989, 12–14; Sorokin 1994, 72; Sorokin 2001, 81–90), but pointed out that the problem of determining the taxonomic status of this phenomenon had not yet been fully elucidated. This is one of the issues addressed in the genesis of the Bolgrad-Aldeni culture. V. I. Sorokin referred to M. Șimon's viewpoints, who placed the Stoicani-Aldeni cultural unit in the middle of the Gumelnița A1 stage. He also challenged the opinion of E. Comșa, who believed that the formation of the Aldeni II variant was a contribution of the communities of the transition phase from the Boian into the Gumelnița culture, as well as those from the beginnings of the Cucuteni culture, an idea that was thrown into question by the Precucuteni imports in the Gumelnița environment. Taking into account these nuances, V. I. Sorokin did not exclude the possibility that the earliest settlements of the Bolgrad-Aldeni culture were contemporary with the Precucuteni settlements such as Larga Jijia-Florești I-Bernashovka or slightly younger. He admitted, at least hypothetically, that the beginnings of the Bolgrad-Aldeni culture was synchronous with the Precucuteni II or, possibly, the beginnings of the Precucuteni III phase (Sorokin 1994, 72–73).

Studies were also published on Gumelnița art (Bejlekchi 1989; Rindyuk and Skakun 1996; Skakun and Rindyuk 1994; Rindyuk and Skakun 1999).

At the beginning of the 21<sup>st</sup> century, systematic archaeological excavations were conducted at the site of Kartal (Bruyako *et al.* 2003, 56–61; Bruyako *et al.*

2005, 13–33; Govedarica and Manzura 2015, 437–456). In 2010, a new Gumelnița settlement was studied by I. V. Manzura and therefore, the problem of the colonisation of the steppe (Bugeac) area in the Prut-Dniester interfluvium by the Balkan-Danubian populations became a pressing one (Govedarica *et al.* 2012; Govedarica and Manzura 2016; Bruyako 2016, 121–131). A new settlement was discovered, Chioselia Mare I, which is currently the northernmost settlement point in the Prut-Dniester area (Mistreanu 2013, 145–156), and one which is mentioned not only in publications dedicated to the Gumelnița culture (Bolgrad-Aldeni). The first magnetometric studies were undertaken at the settlements of Cealic and Chioselia Mare I (Manzura and Govedarica 2018). Different aspects related to the funeral and anthropological issues of the Gumelnița communities were investigated (Dambricourt *et al.* 2008). Some important information on the lithic industry encountered at the Gumelnița settlements were published as well (Kiosak and Subbotin 2016, 93–106). The role of the Bolgrad-Aldeni communities in the Balkan-Carpathian-Pontic Eneolithic cultural complex was discussed and presented as a distinctive cultural entity made of several territorial groups (Stoicani, Aldeni II, Bolgrad) (Burdo 2018, 5–14).

From this brief presentation of the history of research, some general conclusions could be drawn. The exact taxonomic status of the newly identified settlements has not been established, as different names are used to describe it, such as: *culture*, *cultural unit*, *cultural group*, *cultural type*, *cultural facies*, *local group*. These groups have been given different names in various works: *Gumelnița*; *Gumelnița-Ariuşd*; *Bolgrad*; *Aldeni II*; *Stoicani-Aldeni*; *Bolgrad-Aldeni*. As the reader can notice, we use the term “Gumelnița”, until more convincing evidence occurs which would permit one of the above terms to be used. What remains unclear are the period and the causes of development and disappearance of these settlements. Except for the last dates from the Kartal site, (Govedarica and Manzura 2015, 439–440, 442), there is a lack of absolute dating. The authors would like to stress that the general idea behind all of the research is that these settlements were inhabited by populations of Danubian farmers or those closely related to them, namely early Gumelnița communities that appeared in this area in the middle of the 5<sup>th</sup> millennium BC. They lived both in dwellings built on the ground surface and dug into the ground (pit-houses). The economy of these human groups was based on plant cultivation and animal husbandry. Anthropomorphic and zoomorphic art, as well as models of tables and amulets, were found at all of the studied settlements. A common element that provides

some answers to the origins of the populations and trade relationships amongst them are artefacts made of *Balkan flint*. The production of stone tools was equally well developed, also using imported material. The ceramics was the most abundant category of materials discovered. It was divided into two large categories based on the paste and decoration technique – coarse and fine ceramics, with a great variability of types and forms (Subbotin 1983, 60, 71). Another classification system divides them into three categories: ceramics for common use, good ceramics and fine ceramics (Dragomir 1983, 53). There is also a roughly similar division (Govedarica and Manzura 2015, 444–445), distinguishing coarse (kitchen), fine and semi-fine pottery. All of these facts evidence how rich and evolved the material culture of these populations was.

### Gumelnița settlements from the Prut and Dniester interfluvium

The group of settlements between the Prut and the Dniester Rivers were found in the south-western part of this area, and site mapping allowed us to confirm that they had been occupied the north-eastern area of the early Eneolithic farming communities extent that migrated there from the south and the west in the middle of the 5<sup>th</sup> millennium BC. We believe that these were the same communities that formed the Stoicani-Aldeni cultural variant of the Gumelnița culture.

The sites were located on low river banks near watercourses, in valleys near to springs, and on the terraces of Bessarabian lakes. Due to a rather short period of occupation, the new communities in this area did not leave *tell*-type habitations, types of settlements like in north-eastern Wallachia and southern Moldova in Romania. At the Gumelnița settlements discovered in the area of our interest, no consecutive chronological stratigraphy typical of archaeological cultures was found, except for the Kartal site (Bruyako *et al.* 2003, 56–61).

Today, 33 settlements have been unambiguously identified as belonging to the Gumelnița culture – 12 in the territory of the Republic of Moldova and 21 in Ukraine (Fig. 1). Since the beginning of the discovery of the Gumelnița culture in our area of study until this day, 13 settlements have been subject to archaeological excavations: Bolgrad (1962–1963, 1970, 1984, 1999), Cealic (2010–2012), Cucoara I (1972), Lopățica I (1965–1966, 1968), Nagirne II (1964, 1966, 1969, 1971, 1981, 1983–1991), Nova Nekrasivka II (2003), Novosil's'ke I (1984, 1988–1989), Ozerne (1963–1965), Taraclia I (1982–1985), Vulcănești II (1962–1963, 1965, 1969–1970). In the 1980s, surveys were conducted at the Matros'ka and





**Fig. 1.** The settlements of the Gumelnița culture in the Prut-Dniester region. 1 – Andrușul de Sus I, 2 – Andrușul de Sus II, 3 – Bolgrad, 4 – Bolgrad II, 5 – Cealic, 6 – Chioselia Mare I, 7 – Colibaș I, 8 – Cucoara I, 9 – Cucoara II, 10 – Etulia II, 11 – Etulia V, 12 – Etulia VI, 13 – Gribivka IV, 14 – Kartal (Orlovka I, Orlovka II), 15 – Lopățica I, 16 – Matros'ka, 17 – Nagirne II, 18 – Novokam'yanka IV, 19 – Nova Nekrasivka I, 20 – Nova Nekrasivka II, 21 – Novosil's'ke I, 22 – Novosil's'ke II, 23 – Omarbija, 24 – Ozerne, 25 – Ozerne II, 26 – Palanca, 27 – Plavni I, 28 – Plavni IV, 29 – Reni, 30 – Reniiskii II, 31 – Suvorove VI, 32 – Taraclia I, 33 – Utkonosivka, 34 – Utkonosivka I, 35 – Utkonosivka II, 36 – Vladicen'VIII, 37 – Vulcănești II.

Reni sites. Since 2000, systematic excavations at Kartal have been carried out, where the (Bolgrad-Aldeni) level has been confirmed at the Orlovka I site (Mistreanu 2019). In general, settlements sizes varied between 0.5 and 1 ha, but they also reached an area of 2 ha (Ozerne, Bolgrad), and more (Vladicen'VIII, Nova Nekrasivka I, Taraclia I, Utkonosivka), up to 10 ha (Vulcănești II, Reni) (Subbotin 2013, 89). Of course, it is hard to believe these statements, as long as no entire settlement has been investigated. We understand that this data is mostly based on the results of surface research.

### History of the research in the Taraclia I settlement

The site was discovered in 1979 by T. A. Shcherbakova and S. Agulnikov, located near the town of Taraclia (Taraclia district, Republic of Moldova). The site is situated 1.5 km to the south-west of the

town of Taraclia, in the valley of the Ialpuș River, on a small promontory between the Ialpuș and the Lunga Rivers (Fig. 2).

Fragments of burnt smear clay, ceramic fragments and bones were found on the site surface, and in some areas these findings were more abundant. Based on the material concentrations, the existence of four dwellings was assumed: two of them being located in the eastern part of the settlement, one in the south and another in the north (Shcherbakova *et al.* 1984). The settlement was identified as having been established by the Gumelnița communities, namely of the Stoicani-Aldeni type. Also, a mound/tumulus was found on the perimeter of the settlement, which was partially excavated in the following years. However, there is no graphic information or general plan of the site available that would document this research.

Between 1982 and 1985, archaeological rescue investigations were conducted at the site by: I.V. Man-



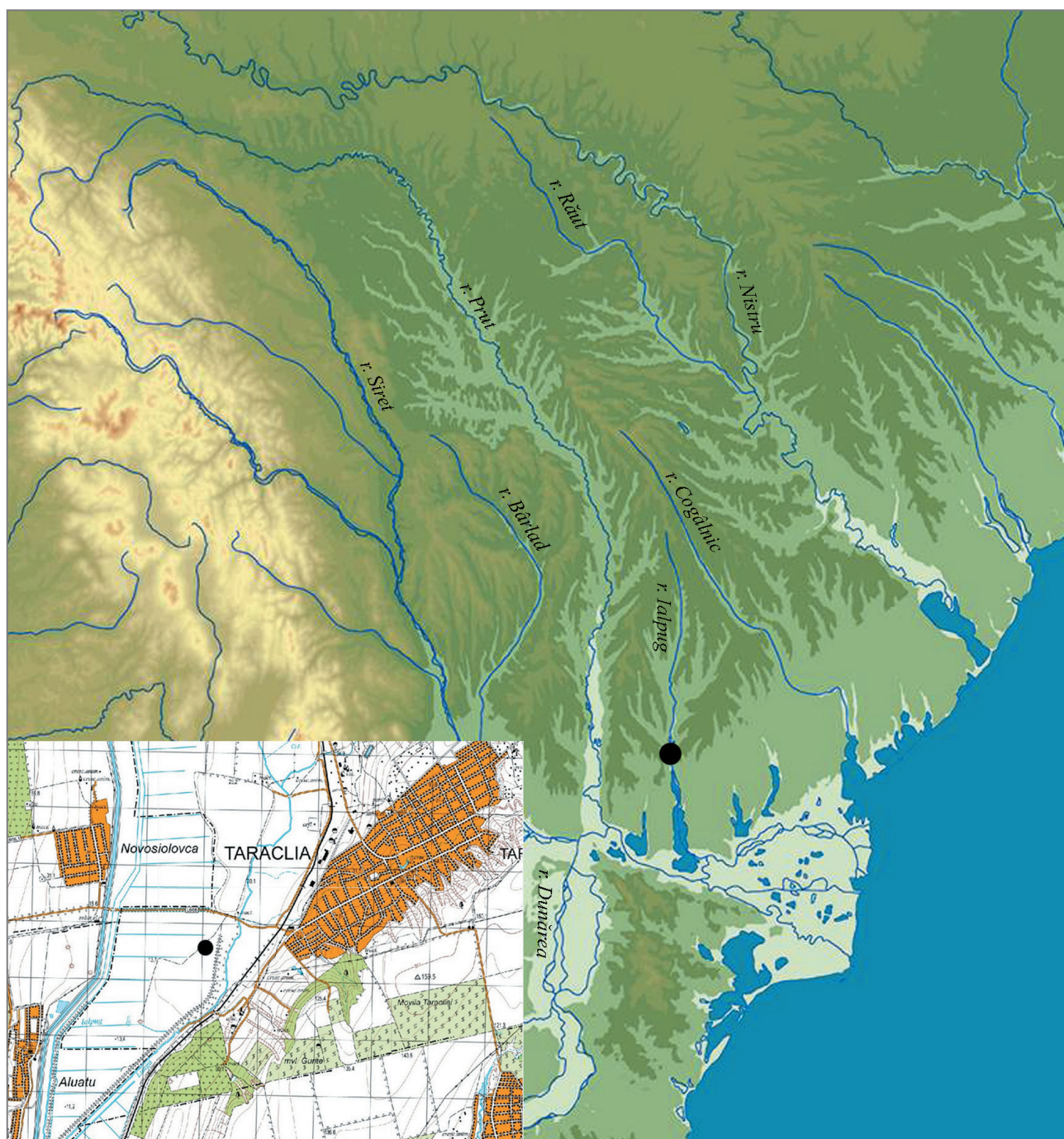


Fig. 2. Taraclia I. Location of the site.

zura (Manzura and Sorokin 1990) in 1982, V.I. Sorokin (Sorokin 1984) in 1983, I.V. Manzura (Mishina and Chirkov 1986, 385; Savva *et al.* 1984) in 1984, and V.S. Beylekchi (Beylekchi *et al.* 1986) in 1985, all being a part of the “Bugeac” archaeological rescue campaign conducted by T. A. Shcherbakova. Very few of the materials discovered from these research campaigns were valorised, mostly with the publication of the article *Гумельницьке поселення у пн. Тараклія* (The Gumelnița settlement near the town of Taraclia)

(Manzura and Sorokin 1990), dedicated to the excavations from 1982. A small summary of the excavations of the other three seasons was published later (Mishina and Chirkov, 1986; Beylekchi, 1987). The discovered anthropomorphic material was partially published in a study by V. S. Beylekchi (1989, 36–47). Several general publications referred to some individual objects discovered at this site (Dergaciov 2010, 242–248). Today, the information on the excavations from Taraclia I is enclosed in the excavation reports preserved in the



Archaeological Archive of NMHM, while the materials found there are stored in the collections of the NMHM. With the excavation reports available, we were able to draw the site plans for all four excavation campaigns, presenting the discovered complexes: dwellings, pits and ditches from the Eneolithic layer.

However, our investigation was hampered since the original documentation (plans, profiles, workbook and drawings) was only available for the 1985 campaign. The graphic quality of the plans in the archaeological reports is also very poor.

The excavation section from 1982 covered the southern edge of the site, namely the area of a possible surface dwelling occurrence, a place where a large concentration of ceramic fragments and burnt smear clay was found. The total dimensions of the site were 32×30 m (640 m<sup>2</sup>). After the excavations had been completed, two new sections, 32 m long and 3 m wide, south-north oriented, were opened at 2 m to the west from the previous section. Thus, in 1982, an area of 838 m<sup>2</sup> was uncovered, delivering the discovery of a dwelling (Fig. 3), three household pits, a clay hearth from a furnace belonging



1



2

**Fig. 3.** Taraclia I. Dwelling discovered in 1982. 1 – View from the north-west.  
2 – General view from the north-east (after Shherbakova *et al.* 1984, photo 4, 5).



to the Gumelnița culture, and three inhumation burials dated to the Bronze Age (Shcherbakova *et al.* 1984).

The excavation section from 1983 was located to the east of the section investigated in 1982. The total area covered by the research was 850 m<sup>2</sup>. In 1983, three dwellings, three pits of the Gumelnița culture and two graves from the Bronze Age were discovered (Sorokin 1984).

The section from 1984 was established on the south-eastern edge of the settlement, 15 m to the east of the section excavated in 1983. The total area subject to

exploration was 432 m<sup>2</sup>. In 1984, there were discovered three pits belonging to the Gumelnița culture, three deep complexes, six pits, and a trench-like construction identified as being the remains of the late nomad period (12–13 century), as well as three graves dated to the Bronze Age (Sava *et. al.* 1984).

The research in 1985 was carried out in the central part of the promontory, to the north of the section explored in 1984. The total area excavated was 1308 m<sup>2</sup>. In 1985, two overground dwellings (Fig. 4), one pit-house (Fig. 5), four household pits, and a defence ditch were



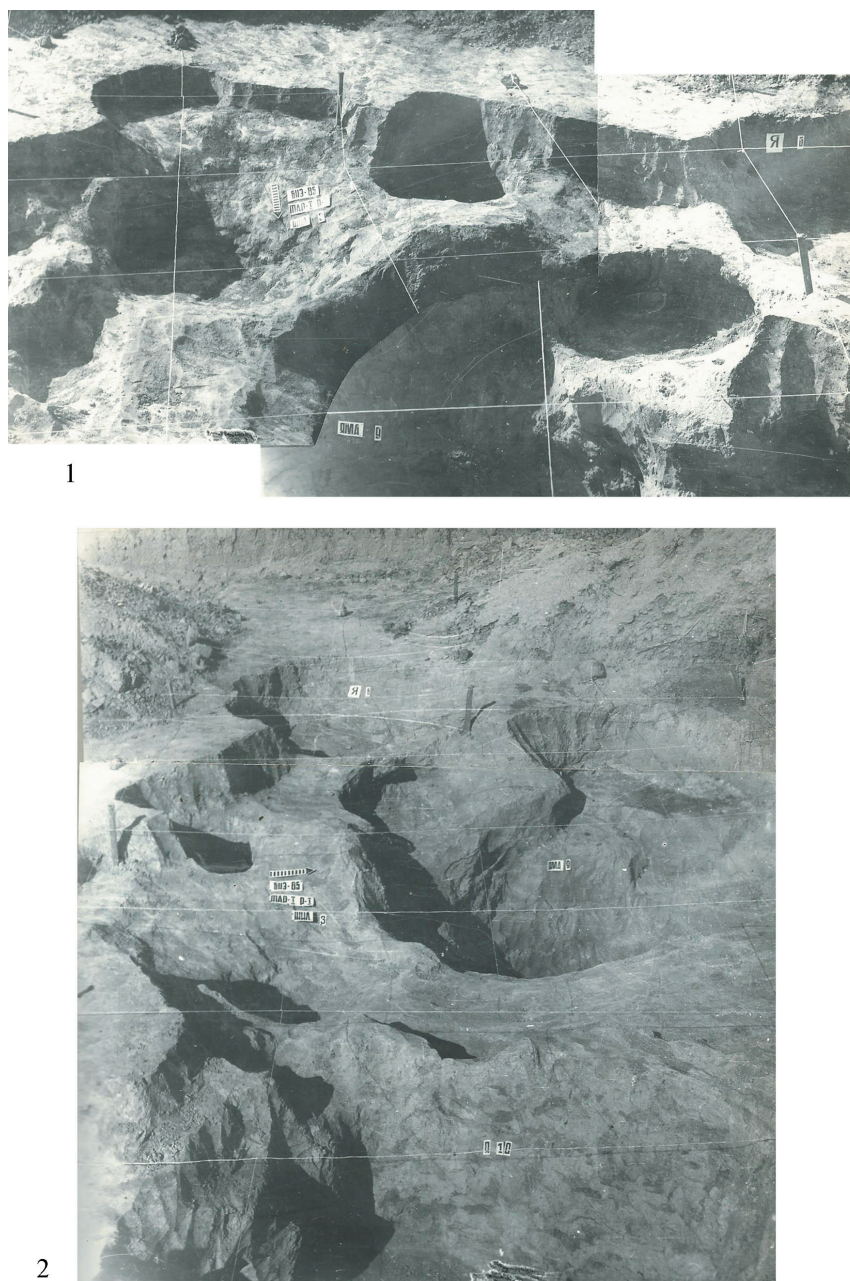
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**Fig. 4.** Taraclia I. Dwellings discovered in 1985. 1 – View of the dwelling no. 1 from the north-east.  
2 – View of the dwelling no. 2 from the north (after Beylekchi and Chirkov 1986, fig. 22, 24).





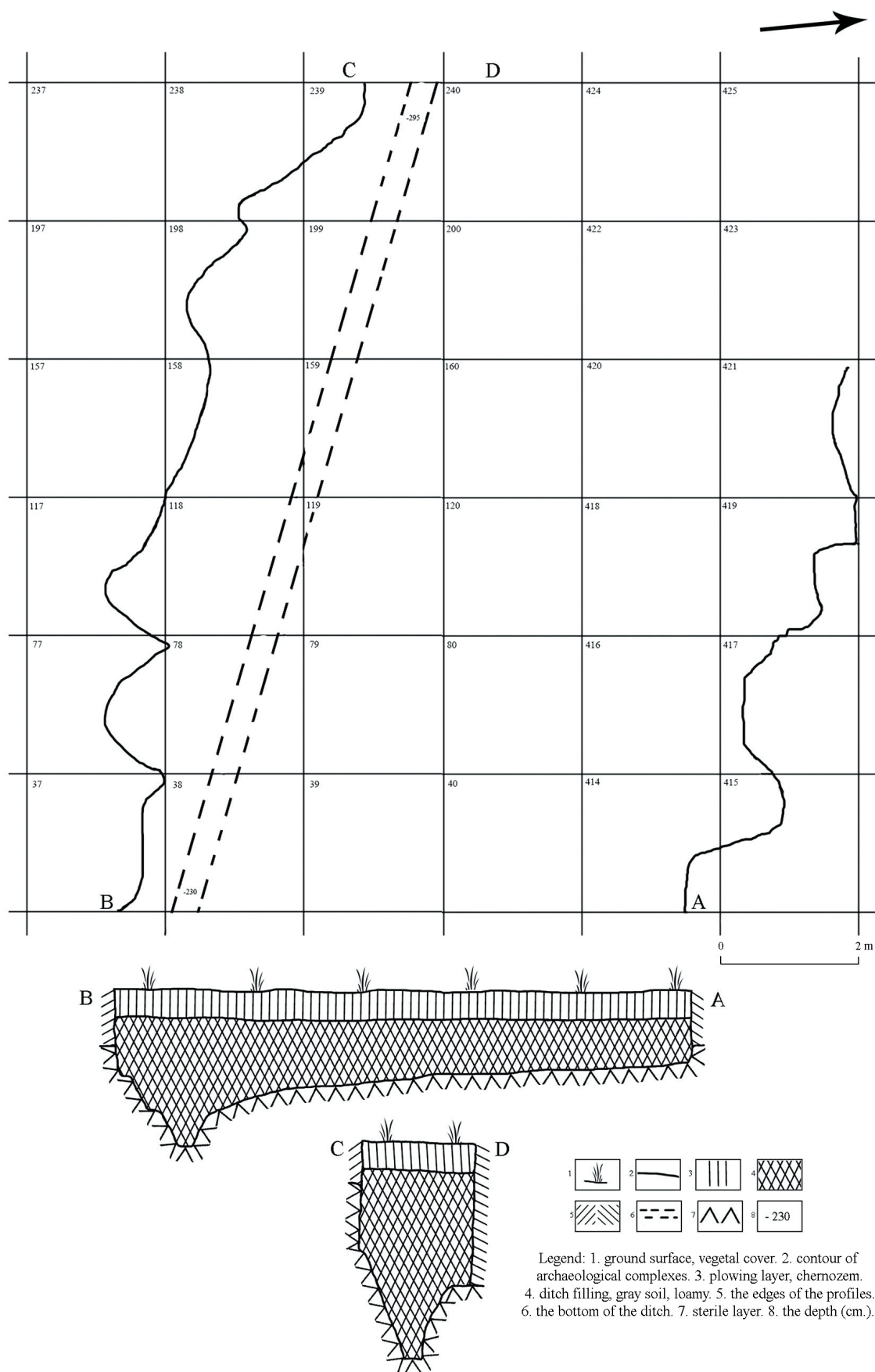
**Fig. 5.** Taraclia I. Dwelling no. 3, pit-house (?). 1 – View from the north.  
2 – View from the east (after Beylekchi and Chirkov 1986, fig. 34, 35).

discovered (Fig. 6) belonging to the Gumelnița culture. Also, two constructions, two draining pits and four pits were assigned to the Golden Horde period; a pit was dated to the late Moldavian Middle Ages. The report also mentioned a pit without chronological and cultural identification, alongside with four tombs conventionally attributed to the Bronze Age (Beylekchi *et al.* 1986). The discovered tombs were most likely related to the mound nearby. The layer of the late nomad period and the Moldavian Middle Age are not substantial.

The Taraclia I site is one of the few archaeological settlements established by the Gumelnița commu-

nities to have been thoroughly excavated during four successive archaeological campaigns, and over such a large area. A total area of 3420 m<sup>2</sup> was investigated (Fig. 7.1). Our analysis will focus on the planimetry and the structure of the settlement, while avoiding the presentation of ceramic material and artefacts.

Upon studying the available reports, we identified 277 individual pieces discovered during the four excavation campaigns, where stone and flint pieces prevailed (Fig. 7.2). Most of them were discovered outside the dwellings, especially in the east, south and the north, with fewer in the western part. This fact confirms a hy-



**Fig. 6.** Taraclia I. Defensive system discovered in 1985. Plan and profiles. (after Beylekchi and Chirkov 1986, fig. 72).

1

year of research	investigated surface (m <sup>2</sup> )	pit houses	dwellings	household pits	clay ovens	ditch
1982	838		1	3	1	
1983	850	2	1	3		
1984	432			3		
1985	1308	1	2	4		1
Total	3428	3	4	13	1	1

2

year of research	artifacts from silex	stone artifacts	artifacts from bone and horn	clay artifacts (fusaiole, amulets)	anthropomorphic and zoomorphic plastic	dishes from clay, spoons	stone grinders	Total
1982	10	10	4		6		2	32
1983	22	19	2	6	11	5		65
1984	9	16	7	2	5		2	41
1985	28	56	7	12	16	10	10	139
Total	69	101	20	20	38	15	14	277

Fig. 7. Taraclia I. 1 – Statistics of investigated areas and discovered complexes. 2 – Statistics of individual discoveries (after: Shherbakova *et al.* 1984; Sorokin 1984; Savva *et al.* 1984; Beylekchi *et al.* 1986).

pothesis that the artefacts once used were thrown away into the immediate vicinity of the settlement. Sometimes they were found spread in groups, often in household pits. This distribution of the assemblage also indicates the entry points into the dwelling. The number of individual pieces found inside the dwellings is rather small. Inside the dwellings there were found large vessels, and not whole individual pieces, which suggest that the dwellings were abandoned before the fire.

Having analysed the general plan of the excavations, we made some observations (Fig. 8). Eight houses were discovered, four overground dwellings and four pit-houses, one of them was just recorded, not researched. Dwellings were found at the depth of 0.2–0.6 m, pit-houses were identified at a depth of 0.6–0.8 m. Their dimensions ranged from 4×5 m to 22×2–8 m, having an approximately rectangular shape. Under the dwellings discovered in 1985, after burnt clay had been removed, five household pits were discovered in both dwellings. 13 features of the Gumelnița culture were identified, most of them being household pits.

Three overground dwellings had annexes located to the west or south of the dwelling. They were oriented along the longitudinal axis in the direction SSW–NNE, with their facade to the east. A similar situation was observed in the overground dwellings from Vulcănești II (Passek and Chernysh 1965), Bolgrad, Ozerne, Nagirne II (Subbotin 1983, 14–29), and some dwellings built on the ground discovered within the Stoicani-Aldeni cultural unit at Drăgușeni-Tecuci, Lișcoteanca

I, Suceveni-Stoborăni (Dragomir 1983, 24–26, 33–34). The minimum distance between them was 14–18 m, which is similar to the distance between the two big pit-houses (?) which were excavated entirely. The fragments of clay with traces of rods and beams were mostly oriented from east to west. Based on the material remains, we can assume that the dwelling no. 2, investigated in 1985, had two rooms.

The pit-houses discovered at Taraclia I reveal a picture similar to that of Bolgrad, Ozerne, Nagirne II (Subbotin 1983, 15–27), where smaller pit-houses and several bigger pit-houses were also discovered, in which many individuals could live together. This picture can help us to understand the social structures of these ancient communities. The plan of pit-houses present an irregular geometric form, consisting of several pits, with a fireplace and ash ground. The pit-house discovered in 1983, has a “L-letter” shape, while the depth of the pits varies between 2.3 and 3.1 m. The other pit-house also consisted of several pits, forming a unique trapezoidal contour.

The identification of the above-mentioned two types of housing indicates an existence of two levels of habitation, separated chronologically: a younger layer characterised by pit-houses, and an older layer represented by dwellings built on the ground. These chronological layers were termed the upper and the lower levels by V. S. Beylekchi (1978, 18–19).

An important element discovered was a protection structure, namely a defence ditch, being the first exca-



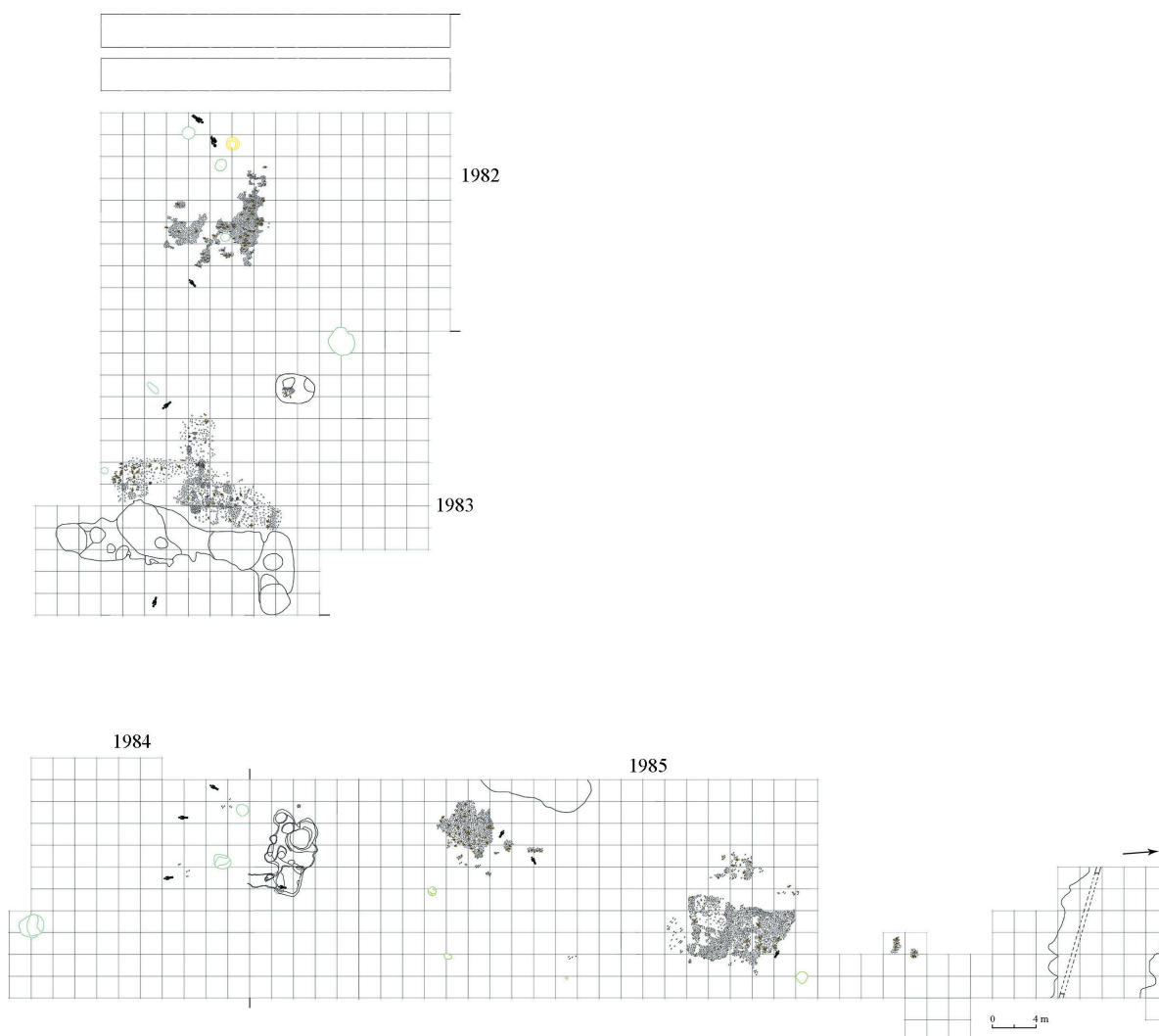


Fig. 8. Taraclia I. General plan of the entire area excavated in 1982–1985.

vated structure of this type within the Gumelnița culture context in this area. It was established that its maximum depth was 2.35–2.95 m, where 1.5–1.9 m were contained within the undisturbed soil. The authors of the research provided a picture of this complex, with a width of 10 m, that we think is unusual, and as we will see below, this was the space between defensive structures, they did not detect the exterior ditch.

By making a parallel to the geomagnetic maps of the Cealic and Chioselia Mare I (Govedarica *et al.* 2012; Govedarica 2016, Manzura and Govedarica 2018), settlements that are located to the north of Taraclia I site, we found that the distance between them is about 15–16 km (Fig. 9). Compared to them, we can assume the presence of 3–5 dwellings along the SW-NE line arranged in a few rows, the settlement from Taraclia I as well, up to the defensive ditch, forming a circular or a four-cornered layout living area. As far as we are

aware, this is the first defensive system discovered and researched within the Gumelnița settlements in the Prut-Dniester region, while this model of artificial fortifications is widely found at the Stoicani-Aldeni settlements in Romania (Dragomir 1983, 18, 19).

### Non-invasive investigation in Taraclia

Starting from the above-mentioned information, in the spring of 2019 (6–8 April), a team of archaeologists from Poland and Republic of Moldova, headed by E. Mistreanu and M. Przybyła, conducted geomagnetic research at the Taraclia I site. Employing the magnetic method enabled the fastest and the fullest coverage of large areas, additionally, it was suitable for discovering linear anomalies like ditches, trenches and moats (David *et al.* 2008, 16–21). Magnetic measurements were performed using a fluxgate magnetometer (gradient-

meter, Misiewicz 2006, 74–98) FoersterFerrex 4.032 DLG, equipped with two probes with a resolution of 0.2 nT. Measuring lines were spaced at intervals of 1 m. The number of measurements per 1 square meter was 10. The data was collected in the bidirectional mode. The obtained results were presented on magnetic maps developed in the Terra Surveyor 3.0.29.3 software.

The investigations encompassed an area of 3.87 hectares. The visibility of detected anomalies related to archaeological features was limited due to the occurrence of a dirt road running through the entire research area. The waysides of this road appeared to contain concentrations of very numerous contemporary iron objects. These objects were also scattered, although in smaller numbers, over the entire area under study. Such specimens are the source of typical dipole anomalies. In the southern part of the investigated

area, a linear anomaly was recorded which is associated with the occurrence of an underground installation (a pipeline). Despite this, the measurements performed allowed the authors to draw a magnetic map of the entire extent of the Gumelnița culture. Moreover, a certain number of anomalies related to archaeological features from recent chronological periods were detected (Fig. 10–13). Clearly legible were the positive linear anomalies connected with ditches surrounding the stronghold (Fig. 15: 1, 2). They formed an alignment which was square in shape, with an external diameter amounting to 130 m, and an internal diameter of 115 m. The distance between these two ditches was ca. 10 m. Additionally, there was another short ditch in the northern corner of the stronghold, between ditches 1 and 2 (Fig. 15: 3). The connection of the latter with the Gumelnița culture is, however, unambiguous.

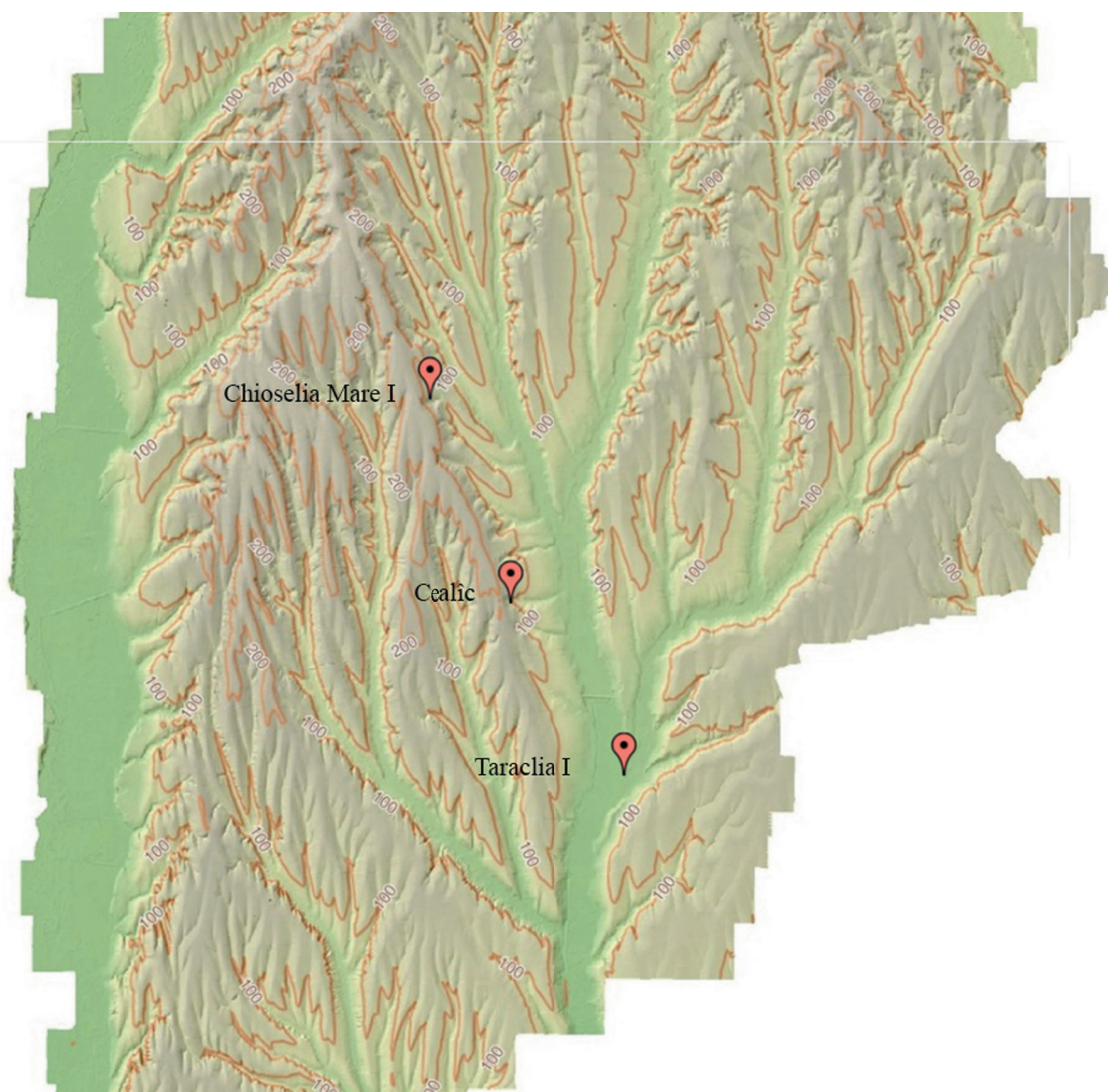


Fig. 9. Relief map with the location of the three sites investigated using the magnetometry method ([www.geoportal.md](http://www.geoportal.md)).





Fig. 10. Taraclia I. Location of the magnetic prospection field.



Fig. 11. Taraclia I. Magnetic map in greyscale, in range  $-8/8$  nT, superimposed on the topographic map.





Fig. 12. Taraclia I. Magnetic map in greyscale, in range  $-5/5$  nT, superimposed on the ortophotographic map.



Fig. 13. Taraclia I. Magnetic map in greyscale with selected extreme values, in range  $-7/7$  nT, superimposed on the ortophotographic map.



Within the lines of the ditches there were readable gates established in the middle of each side of the stronghold. The eastern, southern and western gates were well visible on magnetic maps (Fig. 5: A, B, C). One can expect that there would also have been a northern gate. Unfortunately, in the place of its alleged location there is a present-day road which is a source of strong magnetic interference. It seems that each of these gates had a slightly different construction. The southern gate was the widest, with a passage width amounting to ca. 15 m. The terminal fragments of both ditches headed towards each other, which indicates that originally they might have been conjoined. The eastern and western gates were significantly narrower (ca. 5 m wide). With regard to the eastern gate, the ditches running on its southern side had been most likely conjoined with a transverse shoulder whereas the terminal fragments of the ditches flanking its northern wings split, forming Y-shaped alignments. The construction of the western gate is less obvious. In the south it was flanked by as many as three ditches. Unfortunately, interference from a contemporary source was recorded in its surroundings, hindering its better recognition.

The nature of the stronghold's spatial arrangement is impossible to be described in detail due to the above-mentioned occurrence of a dirt road and very

numerous dipole anomalies caused by iron litter. Noteworthy is the fact that during the excavations carried out at the site (Fig. 14), the authors established that the houses which had been built using clay material had been burnt down. Magnetic anomalies induced by burnt clay are of similar dipole nature as those caused by an occurrence of iron objects. Moreover, the relics of buildings discovered during the excavations had irregular shapes, difficult to identify. Due to this determining a particular building is even more complicated. Despite this, the authors managed to indicate a regular zone of dipole anomalies concentrations, which most likely overpassed with the zone of compact housing of the stronghold. This zone was rectangular in shape and had approximate dimensions of  $85 \times 75$  m (Fig. 15: 4). In the south, west and the north, the residential zone was separated from the internal ditches by an empty space which was a few meters wide. In the east this empty space was significantly wider, amounting to ca. 25 m. Taking into account all of these facts, the authors made an attempt to reconstruct the general spatial arrangement of the stronghold. The settlement consisted of a compact, rectangular block of buildings, surrounded by a double row with four entrances which were symmetrically arranged. In the eastern part of the stronghold, an empty space adjoined the inner ditch. The



Fig. 14. Taraclia I. Excavated area plan superimposed on the magnetic map.





**Fig. 15.** Taraclia I. Magnetic map with anomalies outlined in the text. Red colour – contemporary interference. Green colour – anomalies associated with the settlement of the Gumelnița culture. Blue colour – anomalies associated with younger chronological periods. Yellow colour – excavated area. Dark blue colour – excavated features of the Gumelnița culture.

quadrangular alignment of multiplied lines of fortifications, surrounding the central, regular residential zone, is known from other sites dated to the Copper Age, belonging to the Gumelnița-Kodjadermen-Karanovo VI cultural complex, discovered in the region under study in South-Eastern Europe (Fig. 16–19). This is exemplified, among others, by the sites of Poljanica and Radinograd in Bulgaria (Todorova 1982), Cealic (Govedarica *et al.* 2012, fig. 4, 5; Govedarica 2014, photo 6) and Chioselia Mare I, in Moldova, as we saw in the presentation (Manzura and Govedarica 2018) or a settlement in Suceveni-Stoborăni in Romania (Adamescu 2011). Systems of fortifications with quadrangular ditches are known from the Cucuteni A sites, and the most recent example was recorded at Scânteia – *Dealul Bodești* (Mischka *et al.* 2016, 335, fig. 4, 5). Quite similar planimetry was reported for the Războieni – *Dealul Mare/Dealul Boghiu* (Asăndulesei 2017) site, differing in terms of their sizes when compared with the Gumelnița sites.

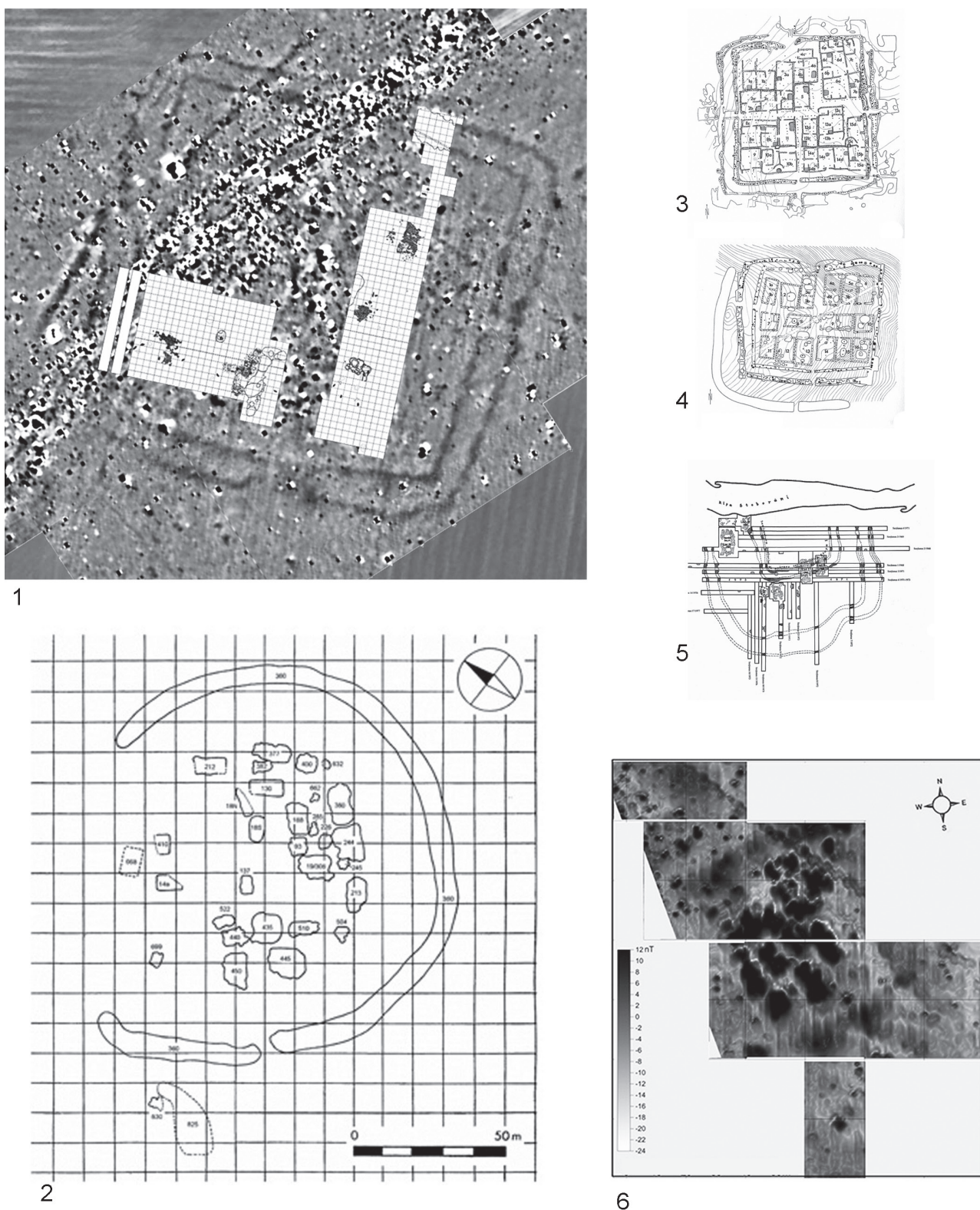
In the central part of the site there was a Yamnaya culture mound (Fig. 15: 5), partially researched in the 1980s. Unfortunately, it was located within the zone where there is considerable contemporary interference and, therefore, it is impossible to identify any magnetic

anomalies associated directly with its construction or the graves inside the mound. In the western part of the site there was another well legible positive linear anomaly connected with a feature of a ditch type (Fig. 15: 8). It cut through the Eneolithic ditches 1 and 2. This structure is believed to have been associated with settlement phases younger than the Gumelnița culture. A few other linear anomalies, with low values and varying in shape of their trajectories, were detected in the southern part of the investigated area (Fig. 15: 6). They were most likely induced by natural (geological) structures. In the northern part of the research area, however, a fragment of an undated settlement was recognised. It consisted of four, more or less quadrangular positive anomalies related to features of a pit-house type, as well as a dozen or so small positive point anomalies, the source of which were features of a pit type (Fig. 15: 7).

## Conclusions

Summarising, we managed to capture three settlements belonging to the Gumelnița culture, namely the Stoicani-Aldeni cultural variant, located in the Ialpuș River basin. The distance between them was





**Fig. 16.** Settlement in Taraclia against other defensive settlements in the Lower Danube region. 1 – Drama, Bulgaria (after: Hansen and Toderaș 2010); 2 – Taraclia; 3 – Poljanica, Bulgaria (after Todorova 1982); 4 – Radingrad, Bulgaria (after Todorova 1982); 5 – Suceveni Stoborani, Romania (after: Adamescu 2011); 6 – Cialic, Moldova (after: Govedarica *et al.* 2012).

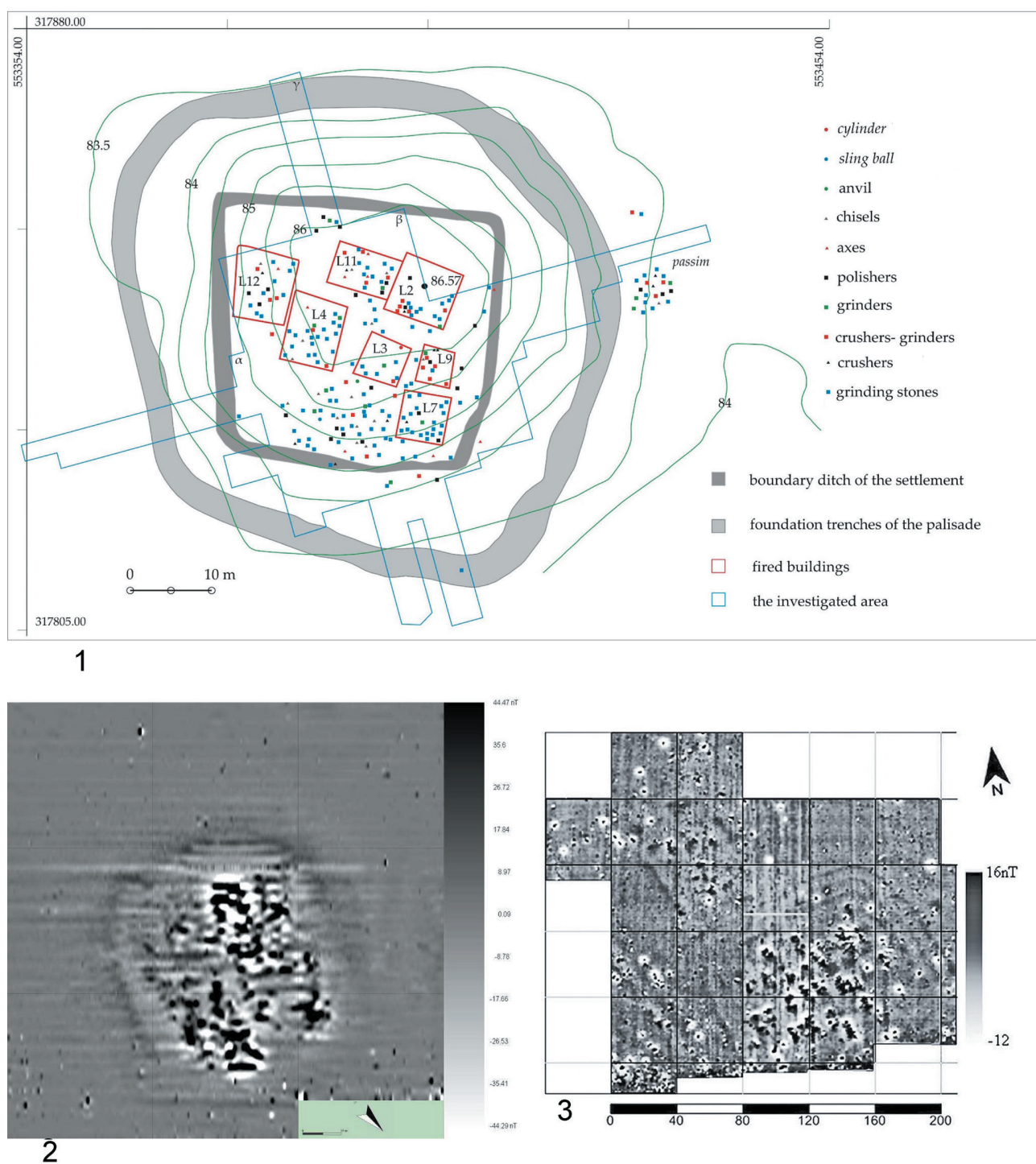
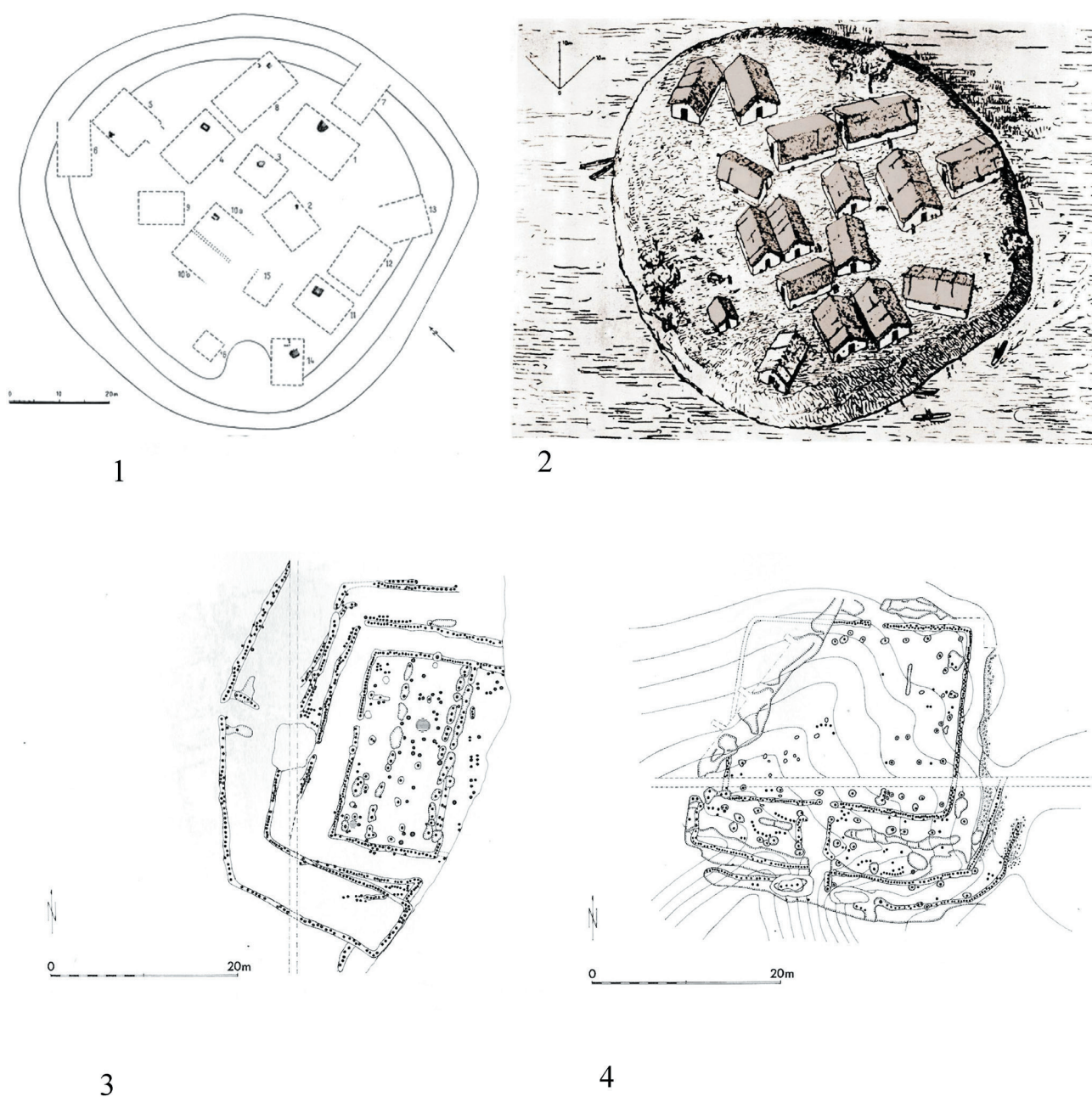


Fig. 17. Defensive settlements of Copper Age in the Lower Danube region. 1 – Bușani-Pod. General plan (after: Bem and Haită 2016); 2 – Geangoești-Hulă. Magnetometric results (after: Miclău and Stăvilă 2014); 3 – Chioselia Mare I. Magnetometric results (after: Govedarica 2014).





**Fig. 18.** Defensive settlements of the Copper Age in the Lower Danube region. 1 – Căscioarele, Gumelnița level, arrangement of buildings (Dumitrescu 1965, 37); 2 – Căscioarele reconstruction, after V. Dumitrescu (after: Lazarovici and Lazarovici 2007, 109, fig. Vc.41); 3 – Goljamo Delčevo, general plan (Todorova 1982, fig. 114, 183); 4 – Ovčarovo, general plan (Todorova 1982, fig. 134, 193).

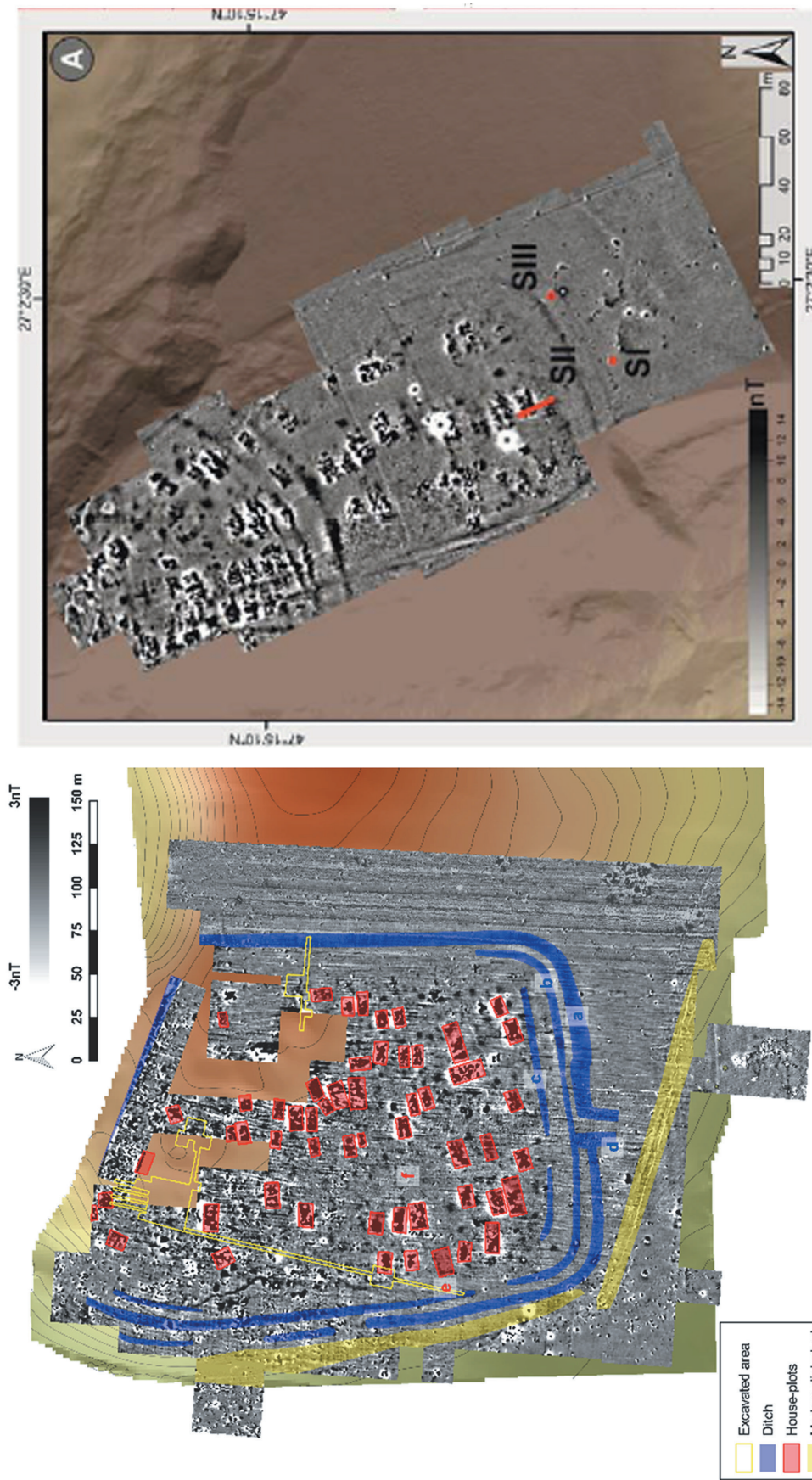


Fig. 19. Defensive settlements of the Copper Age in the Lower Danube region. 1 – Scânteia – Dealul Bodești, magnetogram (Mischka *et al.* 2016, 335, fig. 5); 2 – Războieni – Dealul Mare/Dealul Boghiu, magnetogram (Vornicu *et al.* 2018, 383, pl. II, A).



approximately equal, and all had defensive systems. With this new information, we can state that one of the arguments for distinguishing the settlements from the Bugeac steppe, namely the lack of defence systems (Subbotin 1978, 34; Subbotin 1983, 124–125; Subbotin 2013, 112) is no longer valid.

The archaeological collections of Taraclia I represent an abundant and important source for studying the Gumelnița Eneolithic in the steppe area of the Prut and the Dniester interfluve. The ceramic assemblage recovered during the four excavation campaigns is quite impressive and will be valorised in the future. Supported by the new data concerning the planimetry, type of settlements, and the manner of the construction of the houses, we hope to obtain answers to the question of how this region was colonised in the early Eneolithic.

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### References

- Adamescu A. 2011. Descoperiri din prima epocă a fierului în Așezarea de la Suceveni–Stoborăni, jud. Galați, *Peuce* 9, 377–436.
- Asăndulesei A. 2017. Inside a Cucuteni Settlement: RemoteSensingTechniques for Documenting an Unexplored Eneolithic Site from Northeastern Romania. *Remote Sensing* 9, 41.
- Beylekchi V. 1978. *Ranniy eneolit Nizov'ev Pruta i Dunaja: (Gumel'nitskie poselennya Vulkaneshty II i Lopatsika v juzhnoy chasti Moldavskoy SSR)*. Kishinev: Shtiintsa.
- Beylekchi V. 1987. Raboty Budzhakskoy ekspeditsii. *Arkheologicheskiye otkrytiya*. Moskva: Nauka 1985 goda, 514.
- Beylekchi V. 1989. Izobrazhenie cheloveka v kul'ture Gumelnița. In I. Borziyak (ed.), *Pamyatniki drevneyshego iskusstva na territorii Moldavii*. Kishinev: Shtiintsa, 36–47.
- Beylekchi V. and Chirkov A. 1986. Otchet o rabote Budzhakskoy novostroechnoy ekspeditsii v 1985 goda. Kishinev. Archaeological Archive of National Museum of History of Moldova, no. inv. 231.
- Bem C. and Haită C. 2016. Tell-ul Bucșani Pod (Muntenia, România). Caracteristici tipologice și petrografice ale utilajului litic șlefuit din nivelul superior (Gumelnița B1). *Studii de Preistorie* 13, 63–127.
- Besfamil'naya E. 1966. Antropomorfniye izobrazheniya kul'tury Gumel'nița v SSSR. In *Plenum Instituta archeologii AN SSSR 1966 goda. Sekcija neolita i bronzy*. Moskva.
- Bibikov S. N. 1971. Pam'yatki kul'tury Gumel'nița na territorii Ukrains'koy RSR. In I. Artemenko (ed.), *Archeologiya Ukrains'koy RSR* 1. Kiev: Naukova dumka, 210–213.
- Bibikov S. N., Subbotin L. S. 1986. Pamjatniki kul'tury Gumel'nița na territorii USSR. In I. Artemenko (ed.), *Arkheologiya Ukrainskoy SSR* 1. Kiev: Naukova dumka, 263–268.
- Bruyako I., Manzura I. V. and Subbotin L. S. 2005. Prehistoric settlement „Kartal” (Orlovka): Preliminary information on the excavations in 2001–2002. *Prehistoric Archaeology & Anthropological Theory and Education (= Reports of Prehistoric Research Project)*. Salt Lake City, 6–7, 13–33.
- Bruyako I. 2016. Prirodniy landshtaf poseleniya Kartal v epokhu eneolita. In S. Țerna and B. Govedarica (eds.), *Essays in honour of Igor Manzura on the occasion of his 60th birthday. Interactions, Changes and Meanings*. Kishinev: High Anthropological School, 121–131.
- Bruyako I., Manzura I. and Subbotin L. 2003. Eneoliticheskiy gorizont poseleniya Orlovka – II na Nizhnem Dunae. *Arkheologichni vidkrittia v Ukraini, Kiev 2001–2002*, 56–61.
- Burdo N. 2018. Bolgrad-Aldeni v sisteme rannezemledel'cheskikh kul'tur Karpato-Balkano-Dunayskogo regiona. In I. Bruyako (ed.), *Narody i kul'tury Nizhnego Dunaya v drevnosti. Materialy Mezhdunarodnoy nauchno-prakticheskoy konferentsii (g. Izmail, 23–26 avgusta 2018 g.)*, Izmail: Irbis, 5–14.
- Chernysh E. 1965. Glinobitnye zhilishcha kul'tury Gumel'nița v Nizhnem Podunav'e. *Materialy i issledovaniya po arkheologii SSSR, Novoe v sovetskoy arkheologii* 130, 84–86.
- Chernysh E. 1969. Orudiya truda kul'tury Gumel'nița. *Kratkiye soobshcheniya Instituta arkheologii* 115, 23–28.
- Chernysh E. 1982. Eneolit Pravoberezhnoy Ukrainy i Moldavii. In V. Masson and N. Merpert (eds.), *Eneolit SSSR*. Moskva: Nauka, 253–256.
- Chernyakov I. 1962. Nekotorye arkheologicheskie nahodki iz Bolgradskogo rayona Odesskoy oblasti. *Materialy po arkheologii Severnogo Prichernomor'ya* 4, 138–143.
- Comșa E. 1963. Unele probleme ale aspectului cultural Aldeni II. *Studii și Cercetări de Istorie Veche și Arheologie* 14(1), 7–31.
- Comșa E. 1987. *Neoliticul pe teritoriul României. Considerații*. București: Editura Academiei Republicii Socialiste România.
- David A., Linford N. and Linford P. 2008. *Geophysical Survey in Archaeological Field Evaluation*. Swindon: English Heritage.

- Dambricourt Malassé A., Dolukhanov P., Seferiades M. and Subbotin L. 2008. Funeral Meal and Anthropophagy in Gumelnița Chalcolithic Civilization in the North-Western Black Sea Area. <https://halshs.archives-ouvertes.fr/halshs-00343023>
- Dergaciov V. 2010. Marile civilizații de vechi agricultori și nomazi. Eneoliticul. Începuturile descompunerii orânduirii gentilico-tribale. In V. Dergaciov (ed.), *Istoria Moldovei. Epoca preistorică și antică (până la sec. V)*. Chișinău: Academia de Științe a Moldovei, Institutul patrimoniului cultural, Centrul Arheologie. Tipografia Centrală, 242–249.
- Dragomir I. T. 1983. *Eneoliticul din sud estul României: aspectul cultural Stoicani-Aldeni*. București: Editura Academiei Republicii Socialiste România.
- Gheorghiu D. 2008. Cultural landscapes in the lower Danube area. Experimenting tell settlements. *Documenta Praehistorica* 35, 167–178.
- Dumitrescu V. 1965. Căscioarele. A late Neolithic Settlement on the Lower Danube. *Archaeology* 18(1), 34–40.
- Govedarica B. 2014. Govedarica B. 2014. Orlovka-Kartal, Republik Moldau. Der Siedlungskomplex Orlovka-Kartal und die frühe Kupferzeit im nordwestlichen Schwarzmeer-Gebiet, Die Arbeiten der Jahre 2012 und 2013. In A. Busching (ed.), Faszikel 3 des Deutschen Archäologischen Instituts e-Forschungsberichte des DAI 2014. Berlin: Eurasien-Abteilung des Deutschen Archäologischen Instituts, 74–77.
- Govedarica B. 2016. Conflict or Coexistence: Steppe and Agricultural Societies in the Early Copper Age of the Northwest Black Sea Area. In S. Țerna and B. Govedarica (eds.), *Essays in honour of Igor Manzura on the occasion of his 60th birthday*. Interactions, Changes and Meanings. Kishinev: High Anthropological School, 81–93.
- Govedarica B., Zidarov P. and Manzura I. 2012. *Otchet o geomagnitnom izuchenii poseleniya rannego eneolita kul'tury Bolgrad-Alden' u s. Chalyk, r-n Tarakliya v 2011 godu*. Chișinău. Archaeological Archive of National Museum of History of Moldova, no inv. 532.
- Govedarica B. and Manzura I. 2015. The Copper Age Settlement of Kartal in Orlovka (Southwest Ukraine). In S. Hansen, P. Raczky, A. Anders and A. Reingruber (eds.), *Neolithic and Copper Age between the Carpathians and the Aegean Sea, Chronologies and Technologies from the 6th to the 4th Millennium BCE. International Workshop Budapest 2012 (= Archäologie in Eurasien 31)*. Bonn: Habelt-Verlag, 437–456.
- Govedarica B. and Manzura I. 2016. The Bolgrad-Aldeni culture in the northwest Pontic region: or history of failed colonization. In *Die Cucuteni-Kultur und ihre südlichen nachbarn im 5. jt. V. Chr. Internationales Tagung. 18–22 April 2016*. Academia Română, Filiala Iași.
- Hansen S. and Toderas M. 2010. Pietrele und die neuen Dimensionen kupferzeitlicher Siedlungen an der Unter- en Donau. In *Leben auf dem Tell als soziale Praxis* 14). Bonn, 85–105.
- Kiosak D. and Subbotin L. 2016. O tehnikе skola plastin bolgradskogo varianta kul'tury Gumel'nița. In S. Țerna and B. Govedarica (eds.), *Essays in honour of Igor Manzura on the occasion of his 60th birthday*. Interactions, Changes and Meanings. Kishinev: High Anthropological School, 93–106.
- Lazarovici C-M. and Lazarovici G. 2007. *Arhitectura neoliticului și epocii cuprului din România 2*. Iași: Institutul de Arheologie, Trinitas.
- Manzura I. and Sorokin V. 1990. Gumel'nitskoe poseleniye u pg. Taraclia. In V. Dergachev (ed.), *Arkheologicheskiye issledovaniya molodykh uchenykh Moldavii*. Kishinev: Shtiintsa, 78–93.
- Manzura I. and Govedarica B. 2018. Deutsche-Moldawische Forschungen der Kupferzeit im Nordwestpontischen Gebiet: Ergebnisse und Perspektiven. In *Chronologie in den Archäologischen forschungen – Humboldt-Kolleg: Chișinău, 8–9 November 2018*. Chișinău.
- Micle D. and Stavilă A. 2014. Geangoești-Hulă, Romania: A Gumelnița settlement on the banks of the Dâmbovița River. Non-invasive research results. *Annales d'Université Valahia Târgoviște, Section d'Archéologie et d'Histoire* 16(2), 33–43.
- Misiewicz K., 2006. *Geofizyka archeologiczna*. Warszawa.
- Mistreanu E. 2013. O nouă așezare a culturii Gumelnița de la Chioselia Mare, raionul Cahul, Republica Moldova. *Tyragetia* 7 (22)/1 (= *Arheologie. Istorie Antică*), 145–156.
- Mistreanu E. 2019. Așezările culturii Gumelnița în spațiul pruto-nistean (catalog). *Tyragetia* 13 [28]/1 (= *Arheologie. Istorie Antică*), (in print).
- Mikov V. 1985. Kul'tura neolita, eneolita i bronzy v Bolgarii. *Sovetskaya arkheologiya* 1. Moskva: Institut Arkheologii SSSR, 47–55.
- Mishina T. and Chirkov A. 1986. Gumel'nitskoe poseleniye Taraclia. *Arkheologicheskiye otkrytiya*. Moskva: Nauka 1984 goda, 385.
- Mischka K., Miskha D. and Rubel A. 2016. Geomagnetic survey of Cucuteni – settlements in Moldova – results of theFau – campaign 2015. *Arheologia Moldovei* 39, 333–345.
- Passek T. and Chernysh E. 1965. Otkrytiye kul'tury Gumel'nița v SSSR. *Kratkie soobshcheniya Instituta arkheologii* 100, 6–18.
- Passek T. 1965. Istoriya plemen v V–III tysiacheletiya do n. e. na territorii Moldavii. *Kratkiye soobshcheniya Instituta arkheologii* 105, 3–9.
- Passek T. and Titov V. 1966. Izuchenie eneoliticheskikh poseleniy kul'tury Gumel'nița. *Archeologicheskiye otkrytiya*. Moskva: Nauka, 75–77.



- Passek T. and Gerasimov M. 1967. Novaya statuyetka iz Vulkanesht. *Kratkiye soobshcheniya Instituta arkheologii* 111, 38–42.
- Petrin V. 1967. K petrograficheskomu opredeleniyu sostava i rayonov dobychi mineral'nogo syr'ya rannezemledel'cheskimi plemenami Jugo-Zapada SSSR. *Kratkiye soobshcheniya Instituta arkheologii* 111, 50–59.
- Rindyuk N. and Skakun N. 1996. O nekotorykh kul'tovykh predmetakh iz poseleniya Nagornoye II (Bolgrad-Aldeni II). *Arkheologiya* 3, 109–115.
- Rindyuk N. and Skakun N. 1999. Novye nakhodki antropomorfnoy plastiki v Bolgrad-Aldeni II (= *Vita Antiqua* 1). Kiev: Obshchestvo arkheologii i antropologii, 35–40.
- Savva E., Agul'nikov S. and Manzura I. 1984. *Otchet o polevykh issledovaniyakh Budzhakskoy novostroechnoy arkheologicheskoy ekspeditsii v 1984 g. + Album*. Kishinev: Archaeological Archive of National Museum of History of Moldova, no inv. 212.
- Shcherbakova T., Manzura I., Savva E. and Agul'nikov S. 1984. *Otchet o polevykh issledovaniyakh Budzhakskoy novostroechnoy arkheologicheskoy ekspeditsii v 1982 g.* Kishinev: Archaeological Archive of National Museum of History of Moldova, no inv. 190.
- Skakun N. 1985. Raskopki poseleniya Nagornoye II v Nizhnem Podunav'e. *Arkheologicheskiye otkrytiya 1983 goda*, Moskva: Nauka, 354–355.
- Skakun N. 1987. Raskopki u s. Nagornoye. *Archeologicheskiye otkrytiya 1985 goda*. Moskva: Nauka, 413.
- Skakun N. 1992. The Excavations of the Eneolithic Site Nagornoye II. *Symposia Thracologica* 9. București, 242–243.
- Skakun N. 1994. Novye raskopki jeneoliticheskikh poseleniy v nizov'yah Dunaya. *Arheologicheskiye vesti* 3, 58–68.
- Skakun N. 1996. New excavations of an Eneolithic settlement in the Lower Danube Region. In Gh. Dumitroaia, D. Monah (eds.), *Cucuteni aujourd'hui. 110 ans depuis la découverte en 1884 du site éponyme* (= *Bibliotheca Memoriae Antiquitatis* 2). Piatra-Neamț: Complexul Muzeal Neamț, 141–158.
- Skakun N. and Rindyuk N. 1994. K voprosu ob antropomorfnoy plastike kul'tury epokhi eneolita Bolgrad-Aldeni II (po materialam poseleniya Nagornoye II). In E. Jaarovoy (ed.), *Drevneyshie obshhnosti zemledel'tsev i skotovodov Severnogo Prichernomor'ya V tys. do n. je. – V v. n. e.* Tiraspol: Tipar, 22.
- Skakun N. and Stegantzseva V. 1994. Eneoliticheskaya keramika poseleniya Nagornoye II (iz raskopok 1987 g.). In E. Jaarovoy (ed.), *Drevneyshie obshhnosti zemledel'tsev i skotovodov Severnogo Prichernomor'ya V tys. do n. e. – V v. n. e.* Tiraspol: Tipar, 23.
- Sorokin V. 1984. *Otchet o polevykh issledovaniyakh eneoliticheskogo otryada Budzhakskoy novostroechnoy ekspeditsii v 1983 g.* Kishinev: Archaeological Archive of National Museum of History of Moldova, no inv. 201.
- Sorokin V. 1989. Rannezemledel'cheskiye kul'tury Moldavii (itogi i perspektivy issledovaniy). In V. Dergachev (ed.), *Arkheologiya, etnografiya i iskusstvovedenie v Moldavii: itogi i perspektivy*. Kishinev: Shtiintsa, 12–14.
- Sorokin V. 1994. Culturile eneolitice din Moldova. *Thracodacia* 15(1–2), 67–92.
- Sorokin V. 1997. K probleme kul'turnykh svyazey prekukutensko-ranetripol'skikh plemen s obshchestvami kul'tur Balkano-Dunayskogo regiona. In V. Dergachev (ed.), *Vestigi arheologice din Moldova*. Chișinău: Institutul de Arheologie, Tipografia Academiei de științe RM, 138–155.
- Sorokin V. 2001. Relațiile între culturile Precucuteni-Tripolie A și Bolgrad-Aldeni, *Tyragetia* 10, 81–90.
- Subbotin V. 1978. O sinhronizatsii pamyatnikov kul'tury Gumelnița v Nizhnem Podunav'e. In V. Vanchugov, G. Dzis-Rayko and O. Karyshkovskiy (eds.), *Arkheologicheskiye issledovaniya severo-zapadnogo Prichernomor'ya*. Kiev: Naukova Dumka, 36–41.
- Subbotin V. 1983. *Pamyatniki kul'tury Gumelnița Jugo-Zapada Ukrainy*. Kiev: Naukova Dumka.
- Subbotin V. 1990. Uglublennyye zhilishcha kul'tury Gumelnița v Nizhnem Podunav'e. In V. Zbenovich (ed.), *Rannezemledel'cheskiye poseleniya-giganty tripol'skoy kul'tury na Ukraine*. Kiev: Institut arkheologii, 177–182.
- Subbotin L. 2013. Kul'tura Gumelnica: Bolgradskiy variant. In I. Bruyako and T. Samoylova (eds.), *Drevnie kul'tury Severo-Zapadnogo Prichernomor'ya*. Odessa: Odesskiy arkheologicheskiy muzey, 85–114.
- Șimon M. 1983. Cu privire la relația dintre cultura Varna și cultura Gumelnița. Studii și Cercetări de Istorie Veche și Arheologie, Institutul de Arheologie „Vasile Pârvan” al Academiei Române 34(4), București 305–319.
- Todorova H. 1979. *Eneolit Bolgarii*. Sofija: Balkan.
- Todorova H. 1982. *Kupferzeitliche Siedlungen in Nordostbulgarien*. Materialien zur allgemeinen und vergleichenden Archäologie 13. München.
- Tsalkin V. 1967. Fauna iz raskopok poseleniy kul'tury Gumelnitsy v SSSR. *Kratkiye soobshcheniya Instituta arkheologii* 111, 43–49.
- Vornicu D. M., Bodi G., Asăndulesei A. and Tencariu F. A. 2018. Recent investigations in the chalcolithic settlement of Războieni – Dealul Bogiu. In S. Țurcanu and C. E. Ursu (eds.), *Materiality and identity in pre-and protohistoric Europe*. Homage to Cornelia-Magda Lazarovici. Suceava: Karl A. Romstorfer Publishing House, 367–395.
- Zbenovich 1976. K probleme svyazey Tripol'ya s eneoliticheskimi kul'turami Severnogo Prichernomor'ya In S. Berezanskaya, V. Otroshchenko and D. Telegin (eds.), *Eneolit i bronzoviy vek Ukrainy*. Kiev: Naukova Dumka, 79–92.