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New discoveries concerning the end of the Bronze Age in Jijia catchment

Casandra BRAȘOVEANU¹, Radu-Alexandru BRUNCHI²

Abstract. *The research aims to introduce into the scientific circuit a significant number of settlements specific to Late Bronze Age, which present ashmounds on the soil surface, identified using aerial images and LiDAR measurements. The subsequent verification of the settlements and the identification of archeological material allowed a precise chronological and cultural framing of the 72 sites.*

Rezumat. *Cercetarea vizează introducerea în circuitul științific a unui număr consistent de stațiuni specifice sfârșitului Epocii Bronzului, care prezintă cenușare la suprafața solului, identificate cu ajutorul imaginilor aeriene și a măsurătorilor LiDAR. Verificarea ulterioară a așezărilor și identificarea materialelor arheologice de factură Noua a permis încadrarea cronologico-culturală cu precizie a celor 72 de situri.*

Keywords: *Late Bronze Age, Noua, settlements, ashmounds, aerial photographs, LiDAR.*

Introduction

The research of the Late Bronze Age period, in the territory located east of the Carpathians, has been the subject of interest for many archaeologists over the last century so we benefit from a large number of studies³ and true synthesis works⁴. However, the possibilities offered by the 21st century, in terms of technology, prove to be extremely useful, even for enriching the existing archaeological repertoires.

The fact that the human groups known as Noua, specific to the end of the Bronze Age in the Eastern Carpathians, benefit from a specific imprint (the presence of gray spots - *ashmounds* - on the ground surface), which can no longer be reported in other periods, facilitates their identification with satellite imagery and aerial photography. Also, the fact that they provide elevation responses, appearing as small mounds, also allows signaling using LiDAR measurements. In this context, the present study focuses on introducing into the scientific

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³ PETRESCU-DÎMBOVIȚA 1953; FLORESCU 1964, 1991; PETRESCU-DÎMBOVIȚA ET AL. 1999; DASCĂLU 1994; GAFINCU 2014, 2015; DIACONU 2015; MĂȚĂU 2015; BOLOHAN & DROB 2020;

⁴ DASCĂLU 2007; VIERU 2013; DIACONU 2014; BRAȘOVEANU 2021.

circuit a number of 72 sites, recently identified in the territory known as Jijia hydrographic basins, characterized by the presence of ashmounds. The river of interest springs in Ukraine, at over 400 m altitude, and continues its route approx. 275 km, until it flows into the Prut river, sculpting alongside it and Başeu river, one of the best highlighted physical-geographical units of Romania, which in the past bore its name, but today is known as the Moldavian Plain⁶ (Fig.1).

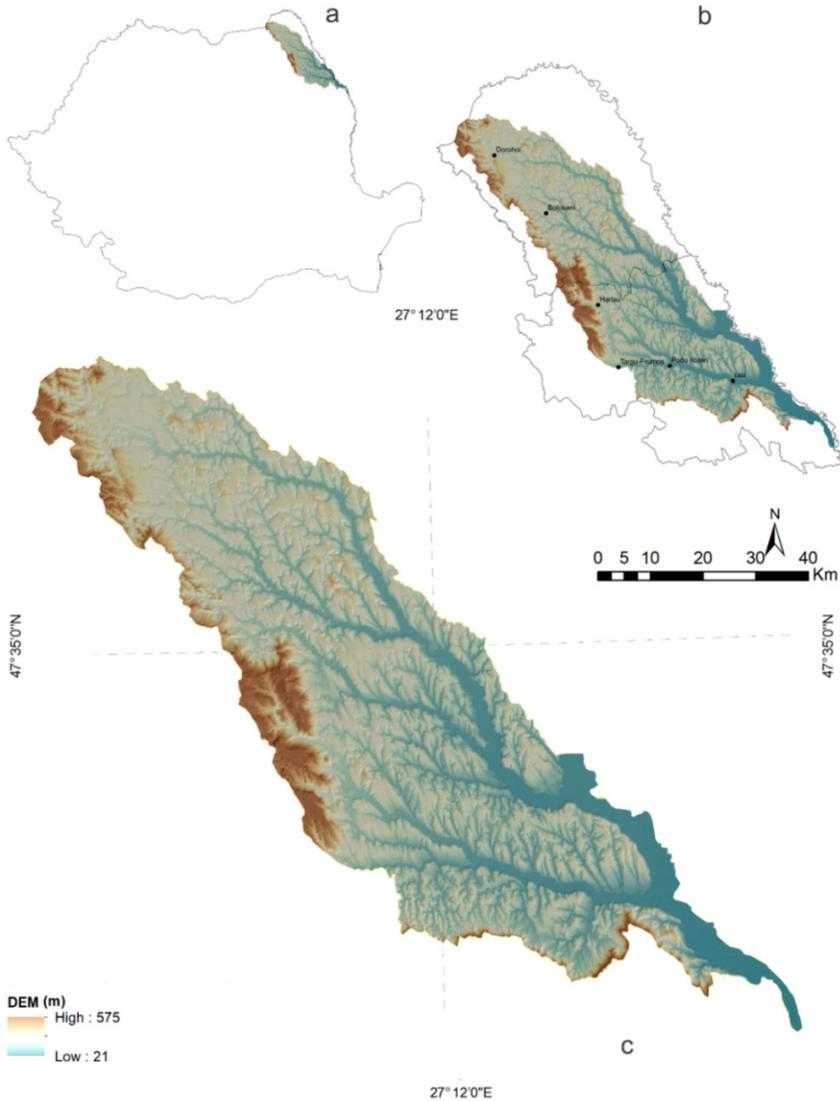


Fig.1. Jijia catchment: **a-** position on the territory of Romania; **b-** position on the territories of Botoşani and Iaşi Counties; **c-** Digital Elevation Model (SRTM 90, ArcGIS 10.6.1).

⁵ Part of the current research represents a segment of the doctoral thesis (BRAŞOVEANU 2021), namely 60 novel settlements and the illustrations that present the archaeological material discovered.

⁶ SÎRCU 1971, 356.

It is clearly delimited, to the north and east, by the Prut River, and to the west and south by the so-called Moldavian Coast/Iași Coast⁷, covering 160 km from northwest to southeast, with a width between 40 and 60 km⁸. This vast geographical subunit presents a relief with a wide undulating appearance, with hilly interfluves, or small plateaus of low altitudes, its general image being that of a low surface, with heights located 150-200 m below the levels from the northwest, west and south⁹.

So far, in Jijia river's basin were identified 287 settlements, making it one of the most frequented territories in the entire area occupied by these Late Bronze Age communities (area that covers the region from the middle and upper Dniester to the east of the Apuseni Mountains and from the sub-Carpathian region of Ukraine to the south of the forest-steppe zone between Siret and Prut¹⁰). Thus, at first glance, the space subjected to study seems to be quite well known, but the use of a consistent set of aerial images, along with the results of LiDAR measurements and, of course, their completion with numerous field research, reveals a different image.

Methods

In this approach were used, first of all, the orthophotoplans offered by the portals Google Earth Pro 7.1.5, InisViewer¹¹, Bing Maps¹², Here Maps¹³ and Atlas Explorer¹⁴, together with the results of LiDAR¹⁵ measurements, with a spatial resolution of 1x1 m/pixel . Following the signaling of a significant number of sites, the next step was represented by field research, in order to verify the presence of archaeological material. For the settlements on the surface of which these materials and, in particular, dwelling remains (fragments of adobe and clay), were identified, GPS coordinates were obtained and aerial photographs were obtained using DJI Phantom 4 Pro v2 drone. Subsequently, a catalog of the settlements was made, for each of them being filled a standard form, structured in four sections: Village/City, *Toponymy* | GPS coordinates | Type and year of research | Geographical description of the location. Next, the sites were sorted alphabetically, depending on the administrative unit that they belong to, afterwards being introduced in Global Mapper 17.0, where the results of LIDAR measurements were also visualised. Finally, the cartographic support was realised in ArcGIS 10.6.1. The latter program allowed the use of maps of the Military Topographic Directorate. The spatial

⁷ SÎRCU 1956; BĂCĂUANU 1968, 9.

⁸ GROZA 2013, 12.

⁹ BĂCĂUANU 1968, 56.

¹⁰ PETRESCU-DÎMBOVIȚA 2010, 276.

¹¹ <https://geoportal.ancpi.ro/geoportal/viewer/index.html>.

¹² <https://www.bing.com/maps>.

¹³ <https://wego.here.com/?map=46.97718,27.97536,13,satellite&x=ep>.

¹⁴ <https://atlas.anpm.ro/>.

¹⁵ These data were provided by the Water Administration Prut-Bârlad.

distribution of the archeological sites was made using as support the Topographic Map of Romania, in order to provide clear indications regarding their positioning, respectively Shuttle Radar Topography Mission (SRTM) 90, in order to overlap all 72 settlements on a Digital Elevation Model (DEM) (Fig.2). The identified archaeological material went through all stages of processing and documentation, being subsequently included in illustrations, using CorelDRAW 2020.

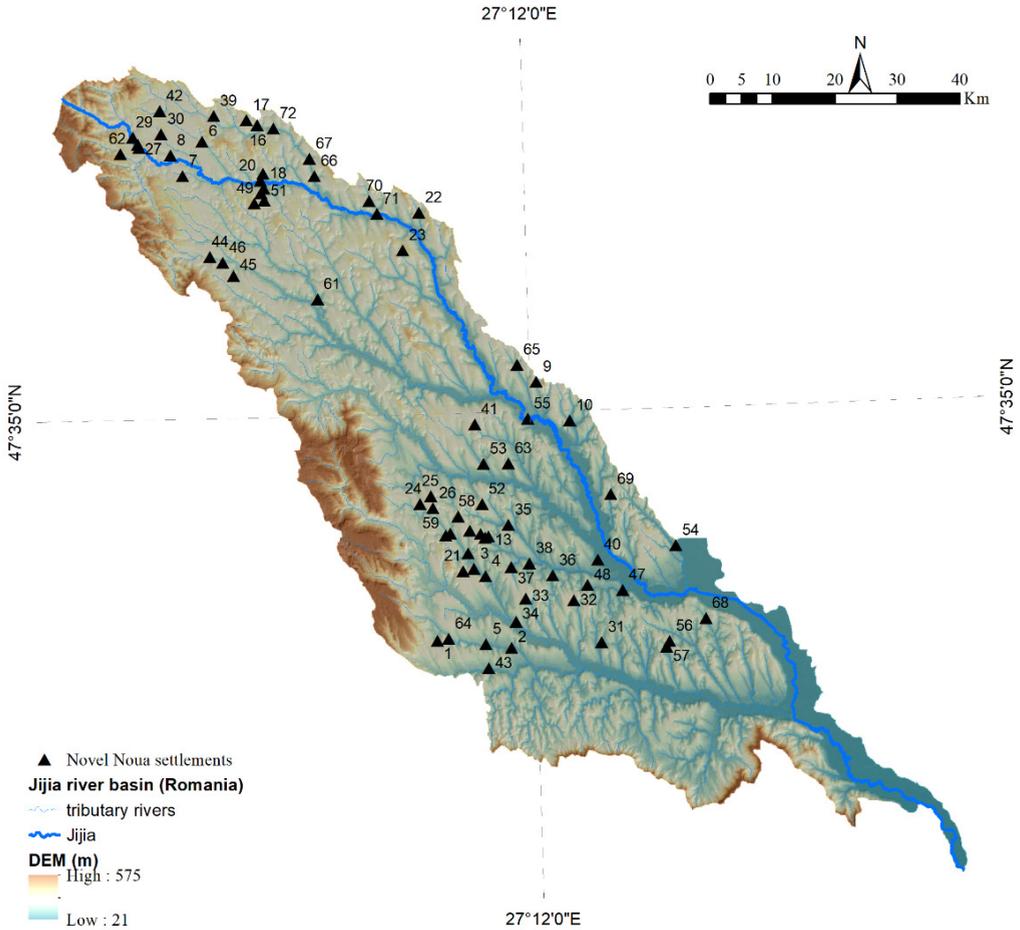


Fig. 2. Spatial distribution of the Noua settlements discussed within the text (SRTM 90, ArcMap 10.6.1)

Results

Next will be presented the repertoire of discoveries of Noua culture sites, recently identified within Jijia river's basin.

- **Balș, Iași County** (pl.1/a)
 1. Boureni, *Dealul Popa Mort* | 26°59'19.46" E, 47°15'25.01" N | Discovery: 2020 | The site is located on the eastern slope of the Popa Mort Hill, at approx. 0,6 km east of the village, on the left side of the road that connects the village and the city Târgu-Frumos;
- **Bălțați, Iași County** (pl.1/b)
 2. Valea Oilor, *Iazul Mădârjești* | 27°8'42.79" E, 47°14'38.78" N | Discovery: 2020 | The settlement is placed north from Mădârjești pond, on the right bank of the stream Valea Turcului;
- **Belcești, Iași County** (pl.1/c)
 3. Belcești, *Dealul Bocancea* | 27° 4'12.81" E, 47°21'35.11" N | Discovery: 2021 | The site is situated in the western extremity of Sava Pond, at approx. 4 km north-east of Hodora village;
 4. Belcești, *Dealul Genei* | 27°5'38.75" E, 47°20'53.69" N | Discovery: 2020 | The settlement is located on the southern slope of Genei Hill, near the Sava Pond, at approx. 2,2 km north-north-west of Satu Nou and at ca. 4,2 km south-west of Coarnele Caprei villages;
 5. Ulmi, *Valea Babelor* | 27° 5'28.02" E, 47°14'59.98" N | Discovery: 2020 | The site is placed north of the Oaia Pond, south-west from the place called *La Poleni*, on the right bank of Valea Drugului stream and on the right side of the pass that allows crossing the pond;
- **Broscăuți, Botoșani County** (pl.1/d)
 6. Broscăuți, *Dealul Ghilauca* | 26°30'47.868" E, 47°59'1.014" N | Discovery: 2021 | The settlement is situated on the south-western slopes of Ghilauca Hill, at the confluence of the streams Ghilauca and Putreda;
 7. Broscăuți, *Dealul Lunca Vântului* | 26°28'4.50" E, 47°56'3.53" N | Discovery: 2020 | The site is located at approx. 2 km south-east of the village and ca. 2 km north-north-west of Recia-Verbia village, on Lunca Vântului Hill;
 8. Broscăuți, *Zahorna* | 26°26'34.90" E, 47°57'50.64" N | Discovery: 2020 | The settlement is placed on the left bank of Zahorna stream, at ca. 0,3 km north of the railway and approx. 1 km north of the village;
- **Călărași, Botoșani County** (pl.1/e)
 9. Călărași, *Dealul Ogorul Popii* | 27°12'47.67" E, 47°37'35.54" N | Discovery: 2020 | The site is situated on the southern slope of Ogorul Popii Hill, at ca. 1 km west of Ciornohal forest and ca. 3,2 km north-north-west of the village;
 10. Pleșani, *Cracalia* | 27°16'55.96" E, 47°34'9.53"N | Discovery: 2020 | Field research: 2020 | The settlement is located at ca. 1 km south of the village, on the right bank of Cracalia river, at the border with Andrieșeni administrative unit, on the left bank of Valea Glăvănești stream (pl.8/a, 13/e-f);

- **Ceplenița, Iași County** (pl.1/f)

11. Ceplenița, *Dealul Ion Clacă* | 27°3'32.03" E, 47°22'55.81" N | Discovery: 2020 | Field research: 2020 | The site is placed in the southern extremity of Ion Clacă Hill, east of Urechii pond, at ca. 2,6 km west from the village Coarnele Caprei (pl.8/b);
12. Ceplenița, *Dealul Jidanului* | 27° 3'48.81" E, 47°24'53.42" N | Discovery: 2021 | The settlement is situated in the south-western extremity of Petroșica village (Coarnele Caprei administrative unit), on the southern slopes of Moara de Vânt Hill and in the proximity of Jidanului Hill;

- **Coarnele Caprei, Iași County** (pl.2/a)

13. Arama, *La nord-vest de sat* | 27° 6'9.74" E, 47°24'20.67" N | Discovery: 2021 | Field research: 2021 | The site is located at approx. 0,7 km north-west from the village (pl.8/c, 13/a);
14. Coarnele Caprei, *Dealul Aramei I* | 27° 5'10.17" E, 47°24'34.44" N | Discovery: 2021 | Field research: 2021 | Archaeological survey: 2021 | The settlement is placed on the south-western slopes of Aramei Hill, east from the lake from Arama village; (pl.8/d)
15. Coarnele Caprei, *Dealul Aramei II* | 27° 5'43.71" E, 47°24'13.52" N | Discovery: 2021 | Field research: 2021 | The site is situated at approx. 0,8 km south-east from the previous, at the confluence of two unknown streams (pl.8/e, 10/a, 11/a-b, 12/f-g, 13/b);

- **Cordăreni, Botoșani County** (pl.2/b)

16. Cordăreni, *Valea Ratoș* | 26°37'49.36" E, 48° 0'20.12" N | Discovery: 2020 | The settlement is located on the left bank of Valea Ratoș stream, at approx. 0,6 km north from the road that connects the villages Cordăreni and Vorniceni, at ca. 2 km east-north-east from the village;
17. Grivița, *Dealul Pâșcu* | 26°36'26.57" E, 48° 0'47.45" N | Discovery: 2020 | The site is placed on the western slope of Pâșcu Hill, on the left bank of Valea Costăchel stream, east of the chalcolithic settlement Cordăreni – *Prosia* and at approx. 2 km east of the village;

- **Corlăteni, Botoșani County** (pl.2/c)

18. Călugărenii Noi, *La vest de sat* | 26°38'28.76" E, 47°54'50.55" N | Discovery: 2020 | The site is situated at ca. 1,6 km west of the village and at approx. 0,7 km south of the railway;
19. Dealu Crucii, *La vest de sat* | 26°38'31.327" E, 47°56'9.424" N | Discovery: 2021 | The settlement is located at approx. 400 m south-west of the village, on the eastern slope of the hill bordered by Valea Borșa river;
20. Podeni, *Valea Borșa* | 26°38'4.51" E, 47°55'32.38" N | Discovery: 2021 | The site is placed at ca. 0,7 km west of the village, on the right bank of Valea Borșa river and on the left one of Jijia river;

- **Cotnari, Iași County** (pl.2/d)

21. Hodora, *Dealul Hrițoaia* | 27°2'50.24" E, 47°21'23.81" N | Discovery: 2020 | The settlement is situated north-north-east from the village, at approx. 1,8 km from its northern extremity, on the southern slope of Hrițoaia Hill;

- **Dângeni, Botoșani County** (pl.2/e)

22. Dângeni, *Valea Dângeni* | 26°58'21.55" E, 47°52'27.86" N | Discovery: 2020 | The site is located on the right bank of Valea Dângeni stream, at the foot of the hill bearing the same name, at approx. 2 km north of the village;
23. Hulub, *La izvoare* | 26°56'8.91" E, 47°49'13.90" N | Discovery: 2021 | The settlement is placed on the western slope of Hârtopului Hill, at ca. 0,5 km south-west of Bulhacul lui Caruz Lake;

- **Deleni, Iași County** (pl.2/f)

24. Deleni, *Dealul Caprei* | 26°57'38.72" E, 47°27'16.983" N | Discovery: 2021 | The site is situated on the western slope of Caprei Hill, at approx. 1 km south-west of the tumular necropolis from Movila Strâmbă, at the confluence of two unknown streams;
25. Deleni, *Valea Dodu* | 26°59'2.989" E, 47°27'58.045 N | Discovery: 2021 | The settlement is located on the left bank of Valea Dodu river, north of the place called Modruz, at ca. 2,1 km north-east of the contemporary settlement from Dealul Caprei;
26. Deleni, *Valea Lipanului* | 26°59'11.96" E, 47°26'52.70" N | Discovery: 2021 | The site is placed on the left bank of Valea Lipanului river, at ca. 1,1 km east Strâmb Lake;

- **Dorohoi, Botoșani County** (pl.3/a)

27. Dorohoi, *Mlaștina Iezerul Dorohoi* | 26°22'32.35" E, 47°58'32.89" N | Discovery: 2020 | The settlement is situated in the south-eastern extremity of Iezerul Dorohoi swamp, north of the railway, on the left bank of Târnușeanu stream;
28. Loturi Enescu, *Dealul Priporului* | 26°22'24.90" E, 47°58'49.77" N | Discovery: 2021 | The site is located on the left bank Iezerul Dorohoi swamp, at approx. 0,4 km north of the previous settlement;
29. Loturi Enescu, *Gura Urlei* | 26°21'51.696" E, 47°59'27.374" N | Discovery: 2021 | The site is placed at ca. 1,2 km west of the village, east of the Iezerul Dorohoi swamp, in the place called Gura Urlei;
30. Loturi Enescu, *Iazul în Grădini* | 26°25'26.23" E, 47°59'42.02" N | Discovery: 2020 | The settlement is situated east of the village and În Grădini pond, on the left bank of Valea Ruștei stream;

- **Dumești, Iași County** (pl.3/b)

31. Dumești, *Dealul Holmului* | 27°20'10.43" E, 47°14'55.75" N | Discovery: 2021 | The site is located on the southern slope of Holmului Hill, on the right bank of Zgârvaci stream;

- **Erbiceni, Iași County** (pl.3/c)

32. Erbiceni, *Dochia* | 27°16'48.60" E, 47°18'37.67" N | Discovery: 2020 | The settlement is positioned in the place called *Dochia*, on the left bank of Valea lui Morțun stream, at ca. 3,5 km north-north-east of the village Românești;
33. Spinoasa, *Dealul Drumul Poștei* | 27°10'41.66" E, 47°18'52.03" N | Discovery: 2020 | The site is situated on the eastern slope of Drumul Poștei Hill, at ca. 2,6 km east of Munteni village

- (Belceşti administrative unit), on the right bank of the stream that flows in Valea Lungă river;
34. Spinoasa, *Dealul Turac* | 27°9'29.009" E, 47°16'55.053" N | Discovery: 2021 | The settlement is located on the south-western slope of Turac Hill, on the right bank of Bahlui river and at approx. 1,2 km south-south-east of Huc pond;
 - **Fântânele, Iaşi County** (pl.3/d)
 35. Fântânele, *Iazul Ghica* | 27°8'50.102" E, 47°25'18.049" N | Discovery: 2021 | The site is positioned on the south-western slope of Urzicani Hill, on the left bank of Boroşoia river, east of Ghica pond;
 - **Focuri, Iaşi County** (pl.3/e)
 36. Focuri, *Dealul Lacului* | 27°14'11.38" E, 47°20'48.29" N | Discovery: 2020 | Field research: 2020 | The settlement is placed on the eastern slope of Lacului Hill, at approx. 1,2 km east of the village and ca. 0,8 km south of Bulbucani pond (pl.8/f, 10/b, 11/d-e, 13/d,g);
 37. Focuri, *Dealul Păişului* | 27°8'56.82" E, 47°21'38.20" N | Discovery: 2020 | Field research: 2020 | The site is situated at approx. 1 km from Păişului Hill and Paiului pond, north-north-west of Focuri and south of Coarnele Caprei villages (pl.9/a, 11/c);
 38. Focuri, *Dealul Rotund* | 27°11'19.14" E, 47°21'55.03" N | Discovery: 2021 | The settlement is located on the eastern slope of Rotund Hill, on the right bank of the lake, at ca. 0,8 km north-west of the village (pl.9/b);
 - **George Enescu, Botoşani County** (pl.3/f)
 39. Dumeni, *La nord de sat* | 26°32'20.332" E, 48°1'12.077" N | Discovery: 2021 | The site is positioned at approx. 0,5 km north of the village, on the right bank of the stream that crosses the village north to south, until it flows in Ibăneasa river;
 - **Gropniţa, Iaşi County** (pl.4/a)
 40. Mălăeşti, *La vest de lac* | 27°19'58.83" E, 47°22'4.60" N | Discovery: 2020 | The settlement is placed at ca. 2,2 km north-north-west of the village, on both banks of Valea Țarinii stream, near the railway from the banks of the lakes that constitute the so-called Moldavian Delta;
 - **Hlipiceni, Botoşani County** (pl.4/b)
 41. Hlipiceni, *Lacurile Şurile Vechi* | 27° 4'47.25" E, 47°34'2.34" N | Discovery: 2021 | The site is situated on the right bank of Şurile Vechi Lake, at ca. 1 km north of Lutulilor Forest;
 - **Ibăneşti, Botoşani County** (pl.4/c)
 42. Dumbrăviţa, *Dealul lui Miron* | 26°25'19.03" E, 48°1'42.95" N | Discovery: 2020 | The settlement is located on the eastern slope of Miron Hill, on the left bank of Valea Ghilauca river, at approx. 0,5 km north from the village;
 - **Ion Neculce, Iaşi County** (pl.4/d)
 43. Războieni, *La nord de calea ferată* | 27° 5'45.73" E, 47°12'57.32" N | Discovery: 2020 | The site is positioned on the right bank of Valea Guga river, at ca. 0,3 km east of its confluence with Bahluiet river and at ca. 1,4 km south-west of Bălţaţi village;

- **Leorda, Botoșani County** (pl.4/e)
44. Leorda, *Valea Ochiului* | 26°31'24.06" E, 47°49'0.40" N | Discovery: 2020 | The settlement is placed on the left bank of Valea Ochiului stream, at the confluence with Sitna, at ca. 0,2 km of the railway and at ca. 1 km north of Cervicești-Deal village;
- **Mihai Eminescu, Botoșani County** (pl.4/f)
45. Cătămărăști-Deal, *La Iazul Pârăsit* | 26°34'30.188" E, 47°47'20.395" N | Discovery: 2021 | The site is situated on the western slope of the promontory near the confluence of Iazul Pârăsit and La Scurtături streams, at ca. 0,6 km north of the railway;
46. Cervicești, *La Scurtături* | 26°33'3.16" E, 47°48'29.12" N | Discovery: 2020 | The settlement is located in the place called *La Ochi*, at ca. 0,3 km east of the railway and ca. 0,2 km from Valea Buduhaci river;
- **Movileni, Iași County** (pl.5/a)
47. Larga Jijia, *Țarina Largă* | 27°23'1.41" E, 47°19'22.32" N | Discovery: 2020 | Field research: 2020 | The site is positioned at ca. 300 m north of the village, in the place called *Țarina Largă*;
48. Potângeni, *Buda* | 27°18'36.30" E, 47°19'55.14" N | Discovery: 2020 | The settlement is placed at ca. 1 km west from the village, on the left bank of Buda stream (pl.9/c, 12/i);
- **Nicșeni, Botoșani County** (pl.5/b)
49. Dorobați, *Dealul Jidanului* | 26°37'14.54" E, 47°53'34.85" N | Discovery: 2020 | The site is situated on Jidanului Hill's plateau, on the left bank of Valea Jidanului river, at ca. 1,6 km north-north-west of the village;
50. Dorobați, *Dealul Vlanic* | 26°38'7.15" E, 47°54'25.86" N | Discovery: 2020 | The settlement is located on the hill's plateau, south-east from the place called La Balta lui Sandu, at ca. 2,5 km north from the village;
51. Dorobați, *Valea Hriboaia* | 26°38'36.572" E, 47°53'49.61" N | Discovery: 2021 | The site is positioned at ca. 1 km north from the village, at the confluence of Prisaca Popii and Hriboaia rivers;
- **Plugari, Iași County** (pl.5/c)
52. Boroșoaia, *Valea Păpușoiului* | 27°5'34.465" E, 47°27'8.906" N | Discovery: 2021 | The settlement is placed in the south-western extremity of the village, on the left bank of Valea Păpușoiului river and at ca. 0,6 km north-west of the tumular necropolis from La Lutărie;
53. Plugari, *Pârâul lui Vasile* | 27° 5'46.19" E, 47°30'37.42" N | Discovery: 2021 | The site is situated on the left bank of Pârâul lui Vasile river and on the right bank of the lake, at ca. 2,5 km north-west from the village;
- **Probotă, Iași County** (pl.5/d)
54. Probotă, *La est de pârâul Frasin* | 27°29'59.03" E, 47°23'6.59" N | Discovery: 2020 | The settlement is located east from Frasin river, in the north-western extremity of the village;

- **Răuseni, Botoşani County** (pl.5/e)
55. Pogorăşti, *Dealul Podişul Curcanului* | 27°11'34.32" E, 47°34'24.01" N | Discovery: 2020 | The site is positioned on the southern slope of the hill, on the left bank of Jijia river, at ca. 2 km south-west from the village and at approx. 3,1 km south from Dragalina (Cristineşti administrative unit);
- **Rediu, Iaşi County** (pl.5/f)
56. Breazu, *Pădurea Mârzeşti* | 27°28'47.11" E, 47°14'51.46" N | Discovery: 2020 | Field research: 2020 | The settlement is placed on both sides of the road that connects Breazu and Horleşti villages, right after passing Mârzeşti forest;
57. Breazu, *Valea Prisăcii* | 27°28'24.01" E, 47°14'21.99" N | Discovery: 2020 | Field research: 2020 | The site is situated north-west from the village, at ca. 1 km north from Tăuteşti village and approx. 500m from Mârzeşti forest (pl.9/d, 10/c-d);
- **Scobinţi, Iaşi County** (pl.6/a)
58. Bădeni, *Dealul Moara de Vânt* | 27°2'21.52" E, 47°26'7.78" N | Discovery: 2020 | The settlement is located on the eastern slope of Moara de Vânt Hill, at ca. 2,4 km north-west from Petroşica (Coarnele Caprei administrative unit) (pl.9/e, 10/e-h, 11/f-k, 12/a-e,h, 13/c);
59. Bădeni, *Gurguieta I* | 27°0'44.44" E, 47°24'29.16" N | Discovery: 2020 | The site is positioned at approx. 0,3 km south-west from the place where Gurguieta river flows into the stream with the same name and at ca. 4 km east from the village;
60. Bădeni, *Gurguieta II* | 27°1'19.56" E, 47°24'41.25" N | Discovery: 2020 | The settlement is placed at approx. 0,7 km north-east from the previous one, on the eastern bank of Gurguieta stream;
- **Stăuceni, Botoşani County** (pl.6/b)
61. Stăuceni, *Dealul Ostrovul Mare* | 26°45'5.00" E, 47°45'10.62" N | Discovery: 2020 | The site is situated west of Stăuceni stream, on the eastern slope of Ostrovul Mare hill, at ca. 1,5 km south-east from Roşiori (Răchiţi administrative unit);
- **Şendriceni, Botoşani County** (pl.6/c)
62. Pădureni, *La vest de pârâul Buhaiul* | 26°20'7.48" E, 47°58'1.64" N | Discovery: 2020 | The settlement is located on the right bank of Buhaiul river, at ca. 0,8 km south from the eastern extremity of the village and at approx. 1 km west of the road to Dorohoi;
- **Şipote, Iaşi County** (pl.6/d)
63. Şipote, *Iazul Coroleuca* | 27° 8'58.45" E, 47°30'35.78" N | Discovery: 2021 | The site is positioned at the confluence of Coroleuca stream and the valley with the same name, on the southern slope of Coroleuca hill;
- **Târgu-Frumos, Iaşi County** (pl.6/e)
64. Târgu-Frumos, *Dealul Hârtopului* | 27° 0'45.92" E, 47°15'34.40" N | Discovery: 2020 | The settlement is placed on the eastern foot of the hill, on the right bank of Oaia, at ca. 3,5 km north-north-east from the town;

- **Todireni, Botoșani County** (pl.6/f)
65. Todireni, *Hârtopul Căldării* | 27°10'25.77" E, 47°39'5.90" N | Discovery: 2020 | Field research: 2020 | The site is situated at approx. 5,5 km north-east of Todireni and at ca. 4,4 km north of the village Victoria, in the southern extremity of the place called Hârtopul Căldării (pl.9/f);
- **Ungureni, Botoșani County** (pl.7/a)
66. Mihai Viteazu, *Dealul Dubina* | 26°45'1.87" E, 47°55'47.94" N | Discovery: 2020 | The settlement is located on the south-western slope of Dubina hill, east from Ibăneasa pond, on the left bank of Valea Dubina river;
67. Mihai Viteazu, *Ibăneasa* | 26°44'25.83" E, 47°57'20.11" N | Discovery: 2020 | The site is positioned east from Ibăneasa pond, at ca. 0,7 km south-east from Ibăneasa village;
- **Victoria, Iași County** (pl.7/b)
68. Stâncă, *Dealul Stâncii* | 27°33'35.281" E, 47°16'44.806" N | Discovery: 2021 | The site is situated at approx. 1,6 km south-west from the village, on the north-north-western slope of Stâncii Hill, on the left bank of Ciric river;
- **Vlădeni, Iași County** (pl.7/c)
69. Vâlcelele, *Pădurea Roșcani* | 27°21'54.36" E, 47°27'41.81" N | Discovery: 2021 | The settlement is placed on the right bank of Harbărau river, east of Roșcani forest;
- **Vlăsinești, Botoșani County** (pl.7/d)
70. Vlăsinești, *Ghițălăria* | 26°51'58.26" E, 47°53'34.62" N | Discovery: 2020 | The settlement is located on the left bank of Valea Negruț river, north from its confluence with Ghițălăria river and east from Ghițălăria hill, at ca. 3,7 km south-south-west of the village;
71. Vlăsinești, *Iazul de la Odaie* | 26°52'56.54" E, 47°52'24.98" N | Discovery: 2020 | The site is positioned south from Odaie pond, on the left bank of Jijia river, at ca. 0,7 km north of the railway and approx. 2 km south-east from Vicoleni (Ungureni administrative unit);
- **Vorniceni, Botoșani County** (pl.7/e)
72. Vorniceni, *Ibăneasa* | 26°39'53.14" E, 47°59'59.65" N | Discovery: 2020 | The settlement is placed north of the confluence area of the two ponds formed by Valea Ibăneasa river, at ca. 0,7 km north-east from the village.

Conclusions

The use of aerial images is a well-known method of monitoring and visualizing various archaeological sites. In the present case, the main feature of Noua communities, namely the presence of ashmounds, was an advantage in recognizing and identifying new settlements, thus enriching the existing repertoire. Correlating this method with LiDAR measurements and field verifications is a solid argument in culturally framing the archaeological sites. Thus, completing all these steps contributed to the outlining of an improved image of one of the best documented archaeological communities that frequented Jijia river's basin, namely Noua

culture (Fig.3). Also, on this occasion, numerous archaeological materials were introduced in the scientific circuit, which come to confirm the cultural affiliation of the identified sites.

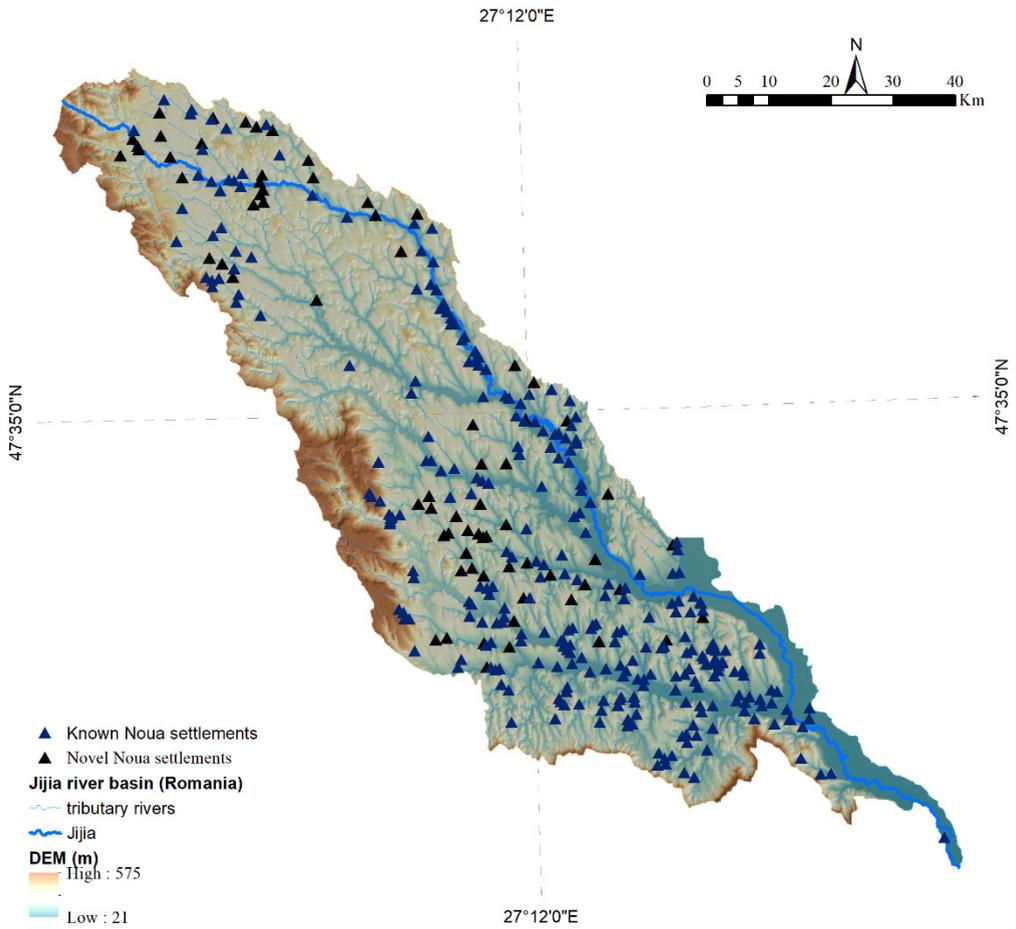


Fig. 3. Spatial distribution of all known settlements belonging to Noua culture in Jijia river basin SRTM 90, ArcMap 10.6.1)

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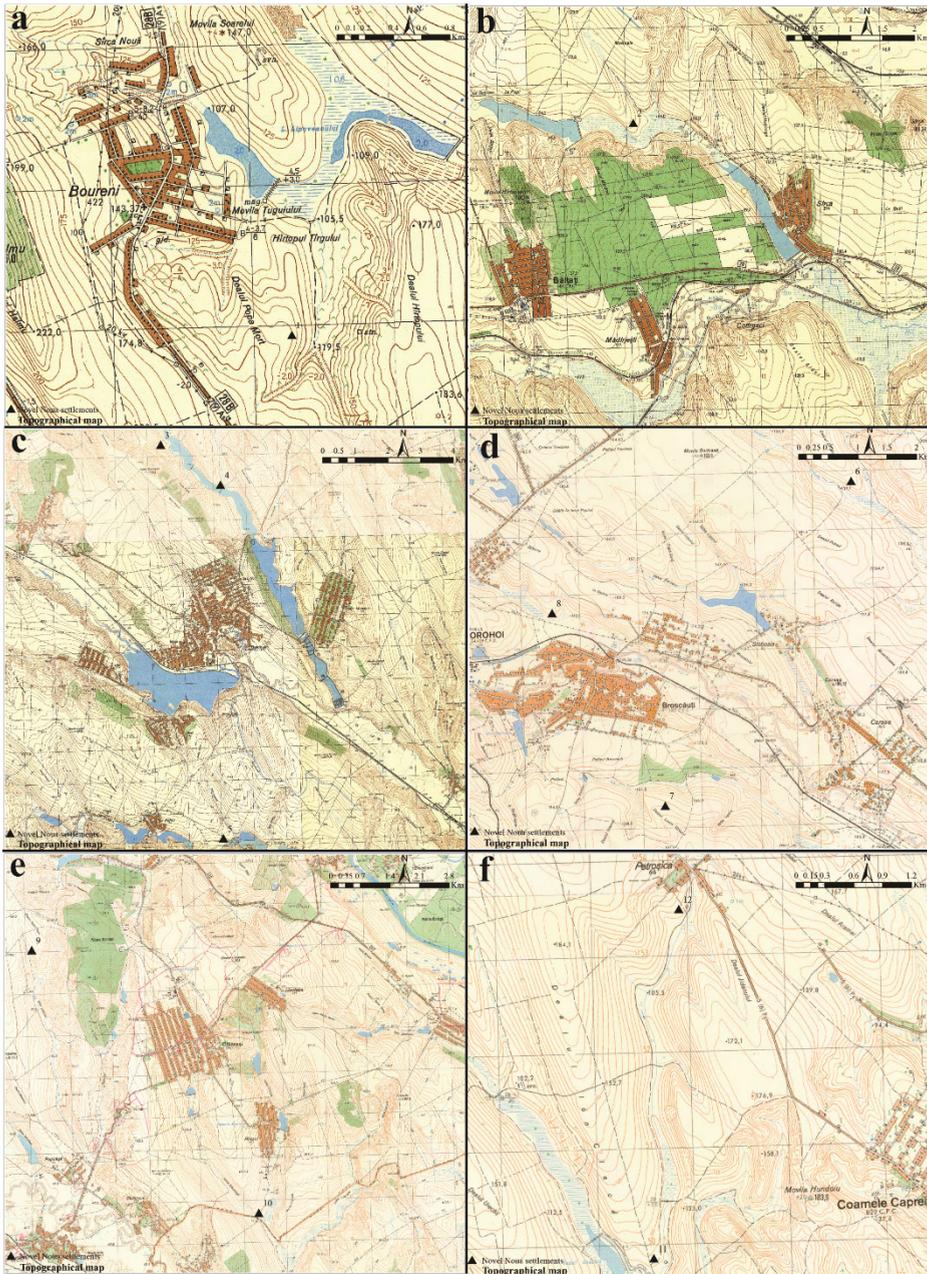
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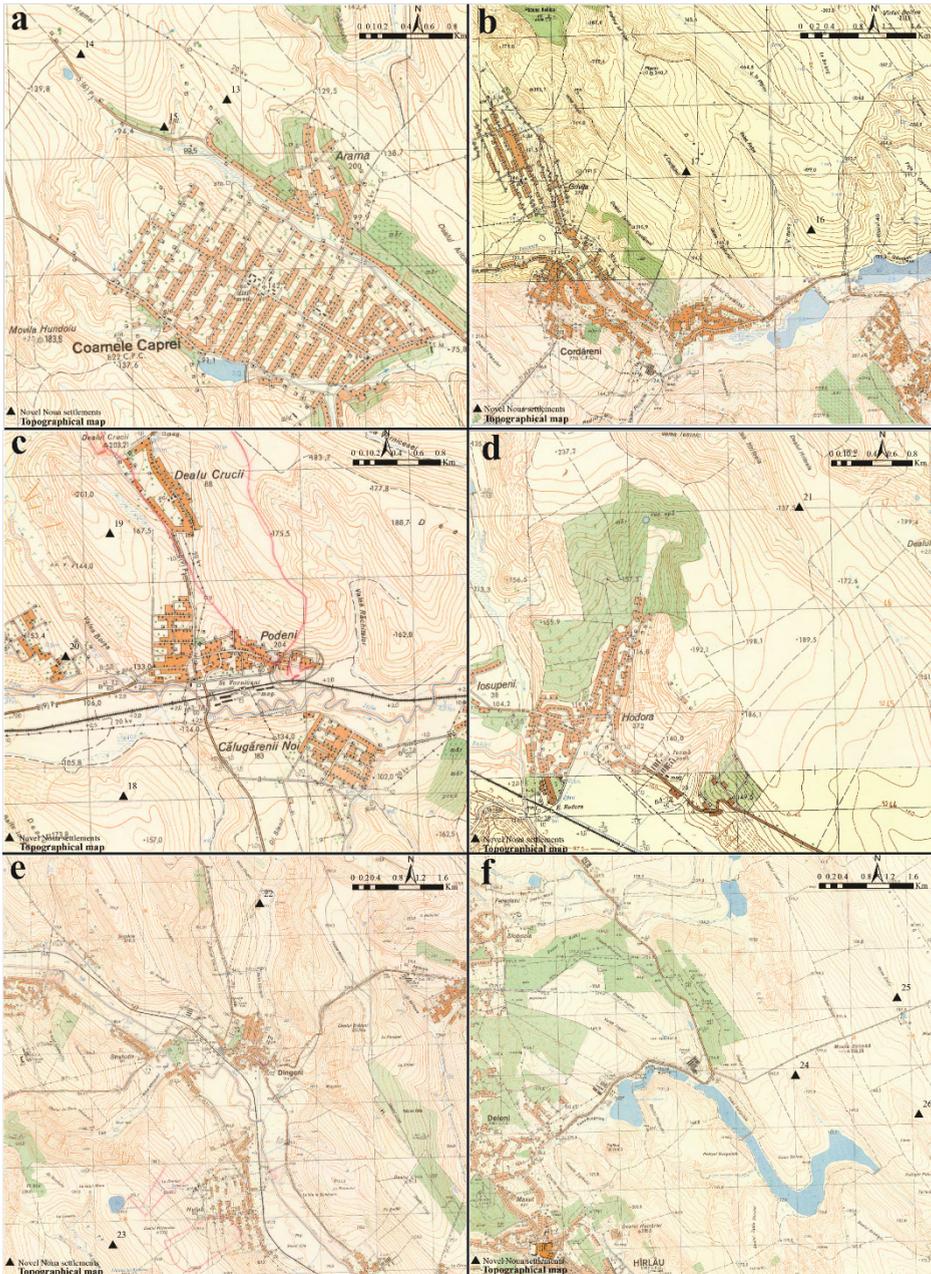
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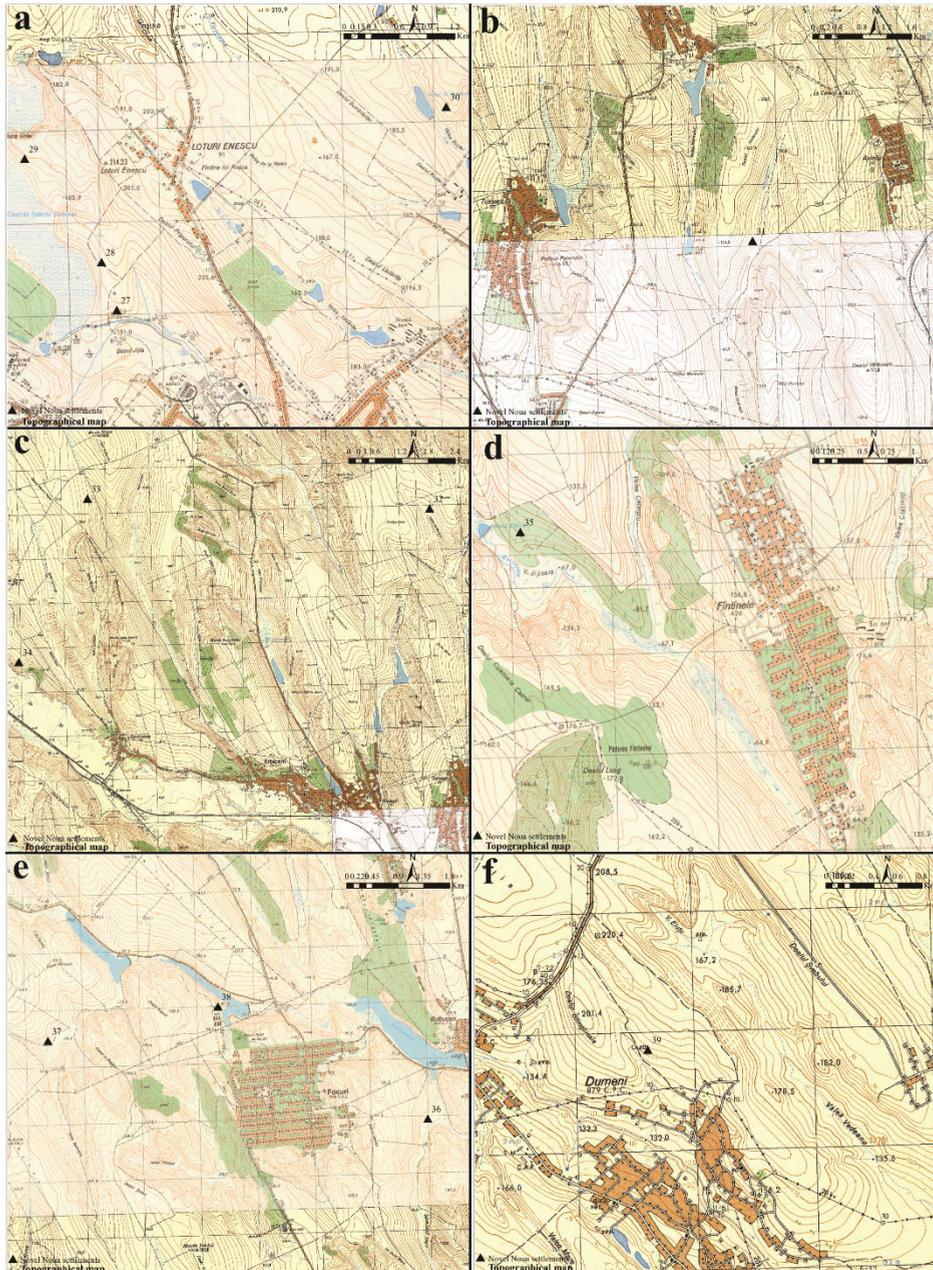
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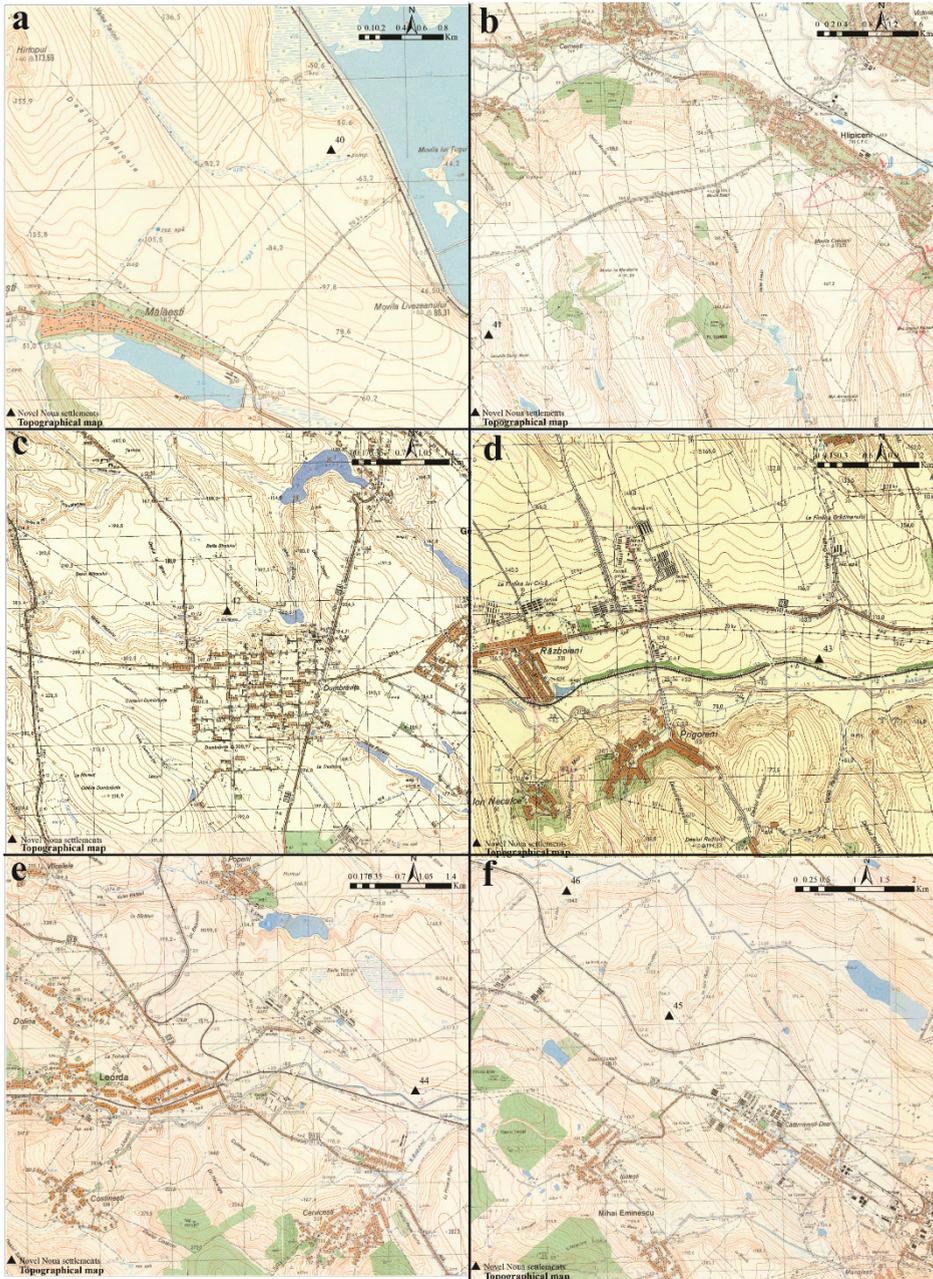
Pl. 1. The spatial positioning of the novel Noua settlements identified in each administrative unit (Topographical Map 1:25.000, ArcGIS 10.6.1). **a-** Balș (Iași County); **b-** Bălțați (Iași County); **c-** Belcești (Iași County); **d-** Broscăuți (Botoșani County); **e-** Călărași (Botoșani County); **f-** Ceplenița (Iași County).



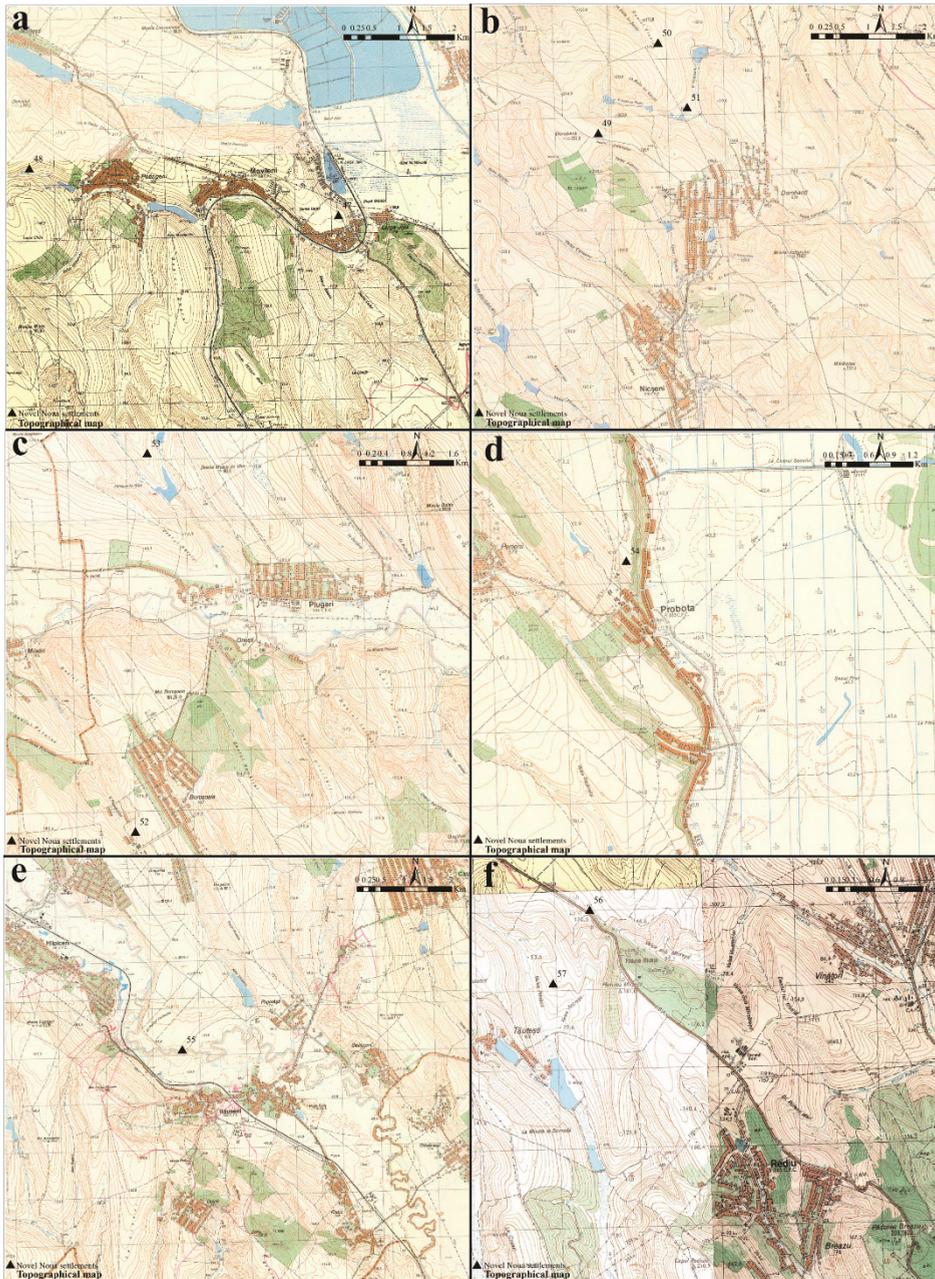
Pl. 2. The spatial positioning of the novel Noua settlements identified in each administrative unit (Topographical Map 1:25,000, ArcGIS 10.6.1). **a-** Coarnele Caprei (Iaşi County); **b-** Cordăreni (Botoşani County); **c-** Corlăteni (Botoşani County); **d-** Cotnari (Iaşi County); **e-** Dângeni (Botoşani County); **f-** Deleni (Iaşi County).



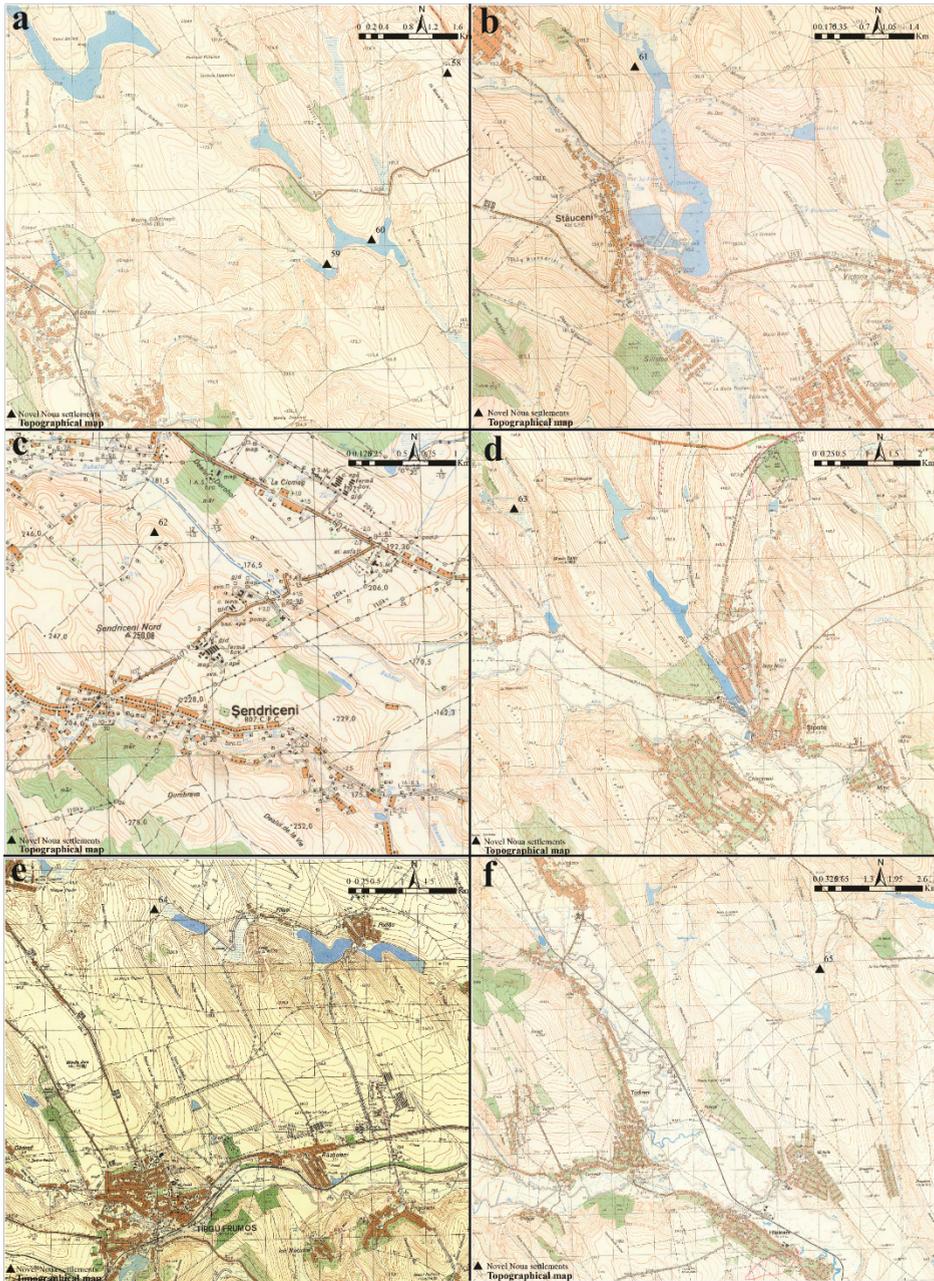
Pl. 3. The spatial positioning of the novel Noua settlements identified in each administrative unit (Topographical Map 1:25,000, ArcGIS 10.6.1). **a-** Dorohoi (Botoșani County); **b-** Dumești (Iași County); **c-** Erbiceni (Iași County); **d-** Fântânele (Iași County); **e-** Focuri (Iași County); **f-** George Enescu (Botoșani County).



Pl. 4. The spatial positioning of the novel Noua settlements identified in each administrative unit (Topographical Map 1:25.000, ArcGIS 10.6.1). **a-** Gropnița (Iași County); **b-** Hlipiceni (Botoșani County); **c-** Ibănești (Botoșani County); **d-** Ion Neculce (Iași County); **e-** Leorda (Botoșani County); **f-** Mihai Eminescu (Botoșani County).



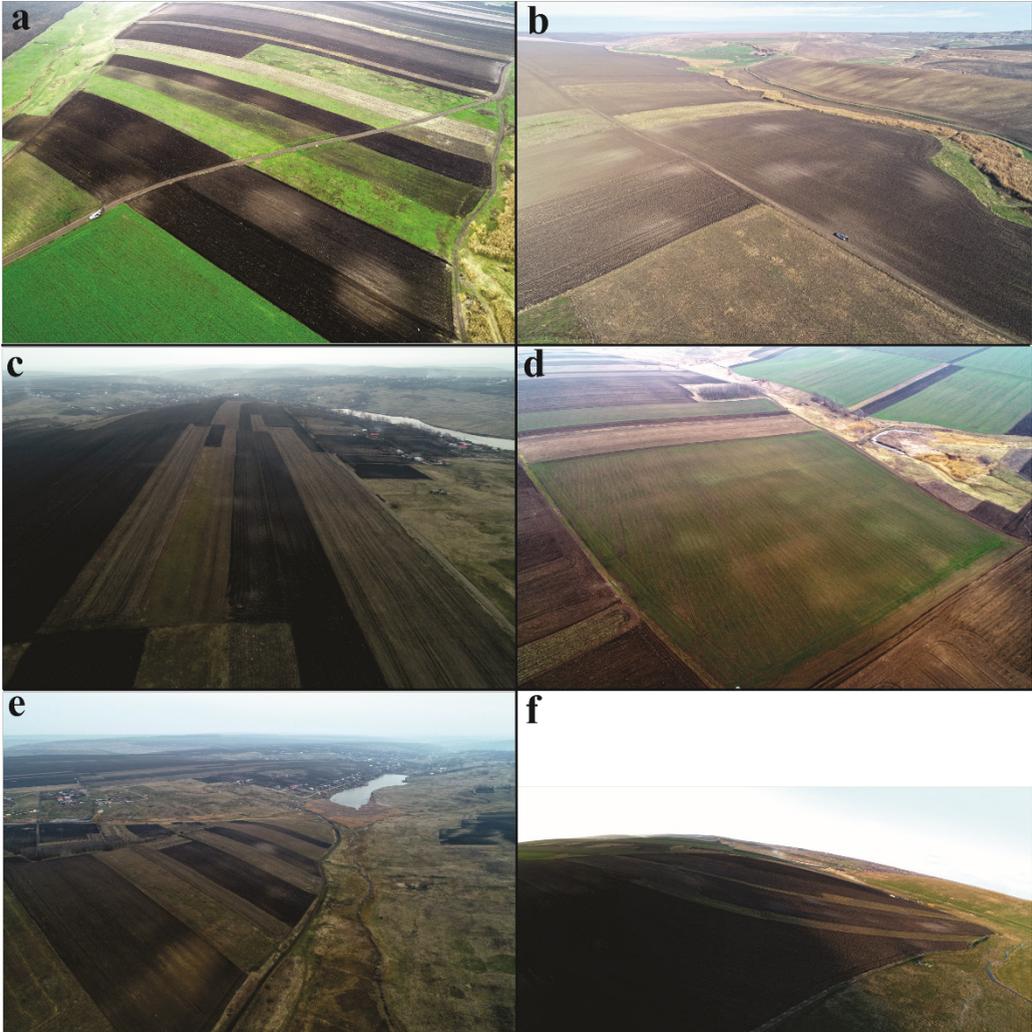
Pl. 5. The spatial positioning of the novel Noua settlements identified in each administrative unit (Topographical Map 1:25,000, ArcGIS 10.6.1). **a-** Movileni (Iași County); **b-** Nicșeni (Botoșani County); **c-** Plugari (Iași County); **d-** Probota (Iași County); **e-** Răuseni (Botoșani County); **f-** Rădu (Iași County).



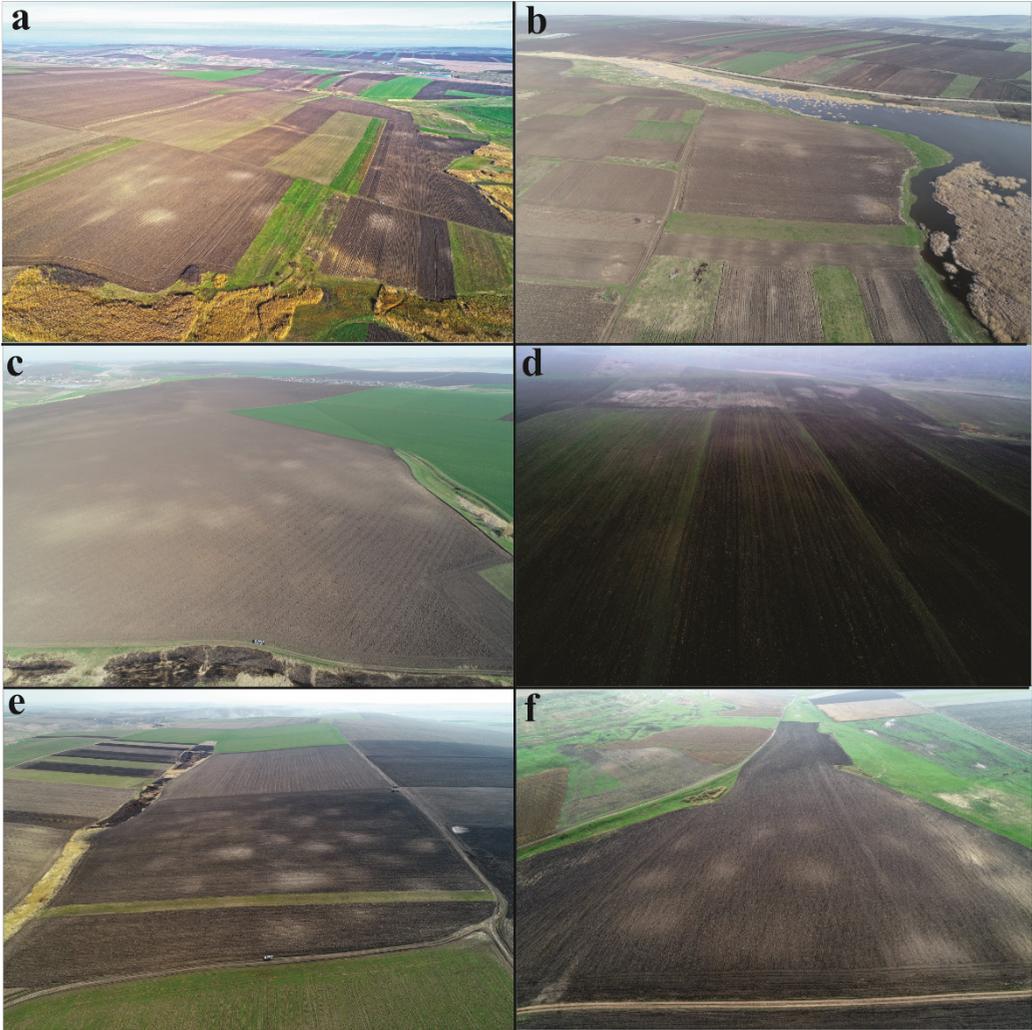
Pl. 6. The spatial positioning of the novel Noua settlements identified in each administrative unit (Topographical Map 1:25,000, ArcGIS 10.6.1). **a-** Scobinți (Iași County); **b-** Stăuceni (Botoșani County); **c-** Șendriceni (Botoșani County); **d-** Șipote (Iași County); **e-** Târgu-Frumos (Iași County); **f-** Todireni (Botoșani County).



Pl. 7. The spatial positioning of the novel Noua settlements identified in each administrative unit (Topographical Map 1:25,000, ArcGIS 10.6.1). **a-** Ungureni (Botoșani County); **b-** Vlădeni (Iași County); **c-** Victoria (Iași County); **d-** Vlăsinești (Botoșani County); **e-** Vorniceni (Botoșani County).



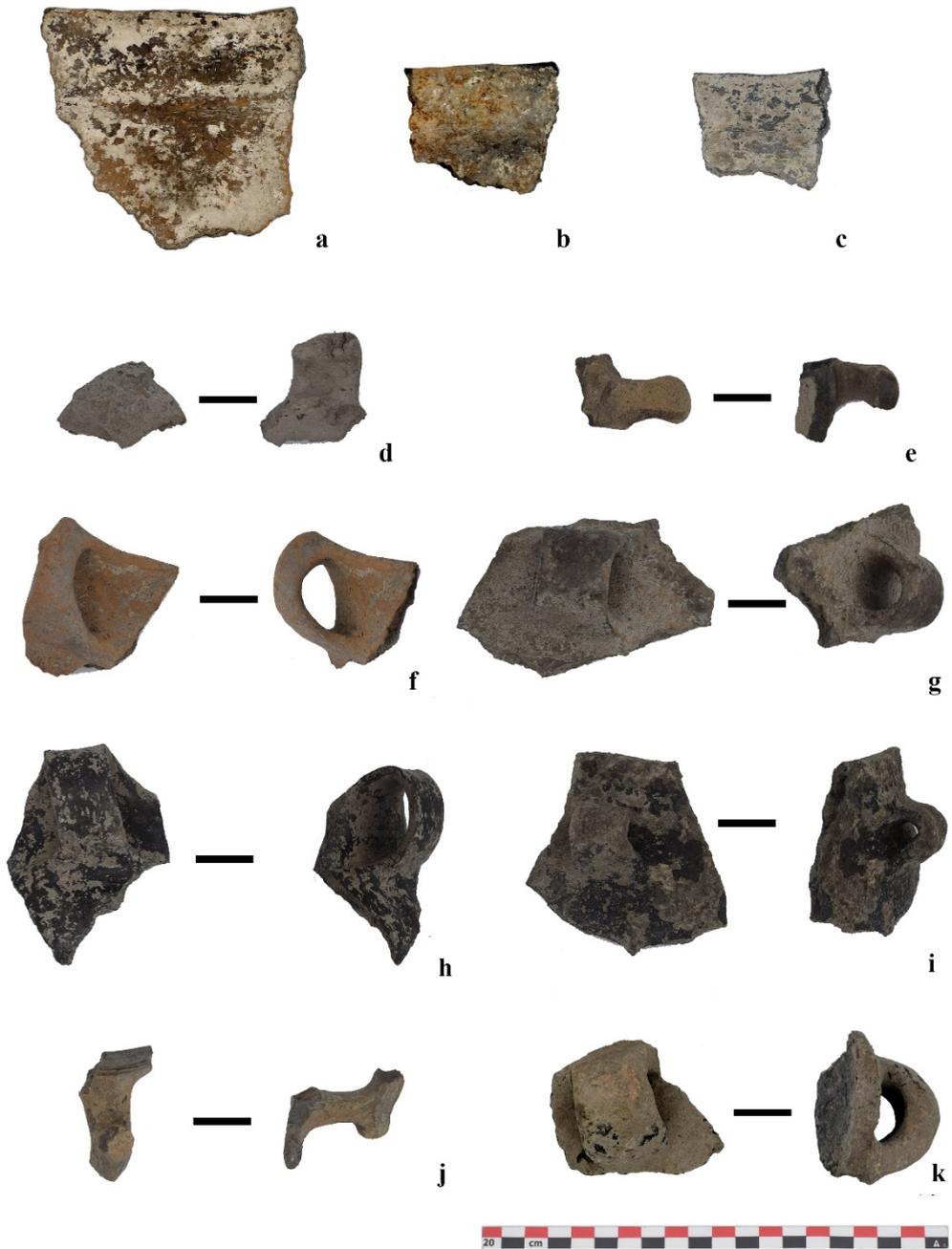
Pl. 8. Aerial photographs of the novel Noua settlements. **a-** Pleşani, *Cracalia*; **b-** Cepleniţa, *Dealul Ion Clacă*; **c-** Arama, *La nord-vest de sat*; **d-** Coarnele Caprei, *Dealul Aramei I*; **e-** Coarnele Caprei, *Dealul Aramei II*; **f-** Focuri, *Dealul Lacului* (DJI Phantom 4 Pro v2; CorelDRAW 2020).



Pl. 9. Aerial photographs of the novel Noua settlements. **a-** Focuri, *Dealul Păişului*; **b-** Focuri, *Dealul Rotund*; **c-** Potângeni, *Buda*; **d-** Breazu, *Valea Prisăcii*; **e-** Bădeni, *Dealul Moara de Vânt*; **f-** Todireni, *Hârtopul Căldării* (DJI Phantom 4 Pro v2; CorelDRAW 2020).



Pl. 10. Crenated *scapulae*. **a-** Coarnele Caprei – Dealul Aramei II; **b-** Focuri – Dealul Lacului; **c-d-** Breazu, Valea Prisăcii; **e-h-** Bădeni, Dealul Moara de Vânt (CorelDRAW 2020).



Pl. 11. Ceramic fragments. **a-b-** Coarnele Caprei, Dealul Aramei II; **c-** Focuri, Dealul Pășului; **d-e-** Focuri, Dealul Lacului; **f-k-** Bădeni, Dealul Moara de Vânt (CorelDRAW 2020).



Pl. 12. Other. **a-** Loom weight; **b-e-** Perforated ceramic fragments; **f-i-** Adobe fragments. **a-e,h-** Bădeni, *Dealul Moara de Vânt*; **f-g-** Coarnele Caprei, *Dealul Aramei II*; **i-** Potângenii, *Buda* (CorelDRAW 2020).



Pl. 13. Stone artifacts. **a-** Arama, *La nord-vest de sat*; **b-** Coarnele Caprei, *Dealul Aramei II*; **c-** Bădeni, *Dealul Moara de Vânt*; **d,g-** Focuri, *Dealul Lacului*; **e-f-** Pleșani, *Cracalia* (CorelDRAW 2020).



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