

Mounds of Fire! The Tumular Necropolis of Borșa-La Cișmele (Vlădeni, Iași County)

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Abstract. North-eastern Romania benefits of a high density of tumuli, belonging to various prehistoric or historic communities. Previous endeavors of our team have identified within this workspace, with the help of LiDAR data, aerial photographs and cartographical supports, a number of 1791 of such mounds, usually placed on hilltops, forming somewhat-linear arrangements, but also exceptional situations, such as the case of the tumular necropolis of Borșa-La Cișmele, a novel discovery that does not resemble anything studied so far. The site comprises at least six mounds, out of which we have identified two groups of mounds connected by earthworks, shaping semi-circles. After the documentation stage, our team has carried out fieldwalks, with which occasion the presence of reddish coloured soil was observed. This characteristic was signaled only on the surface of the four connected mounds, suggesting that the tumuli in question were not guarding some inhumation burials, but were witnesses of an impressive cremation ritual. Thus, the current paper aims at signaling the presence of the monuments in question within the barrow landscape of NE Romania, as a first step in the research strategy undertaken by our team.

Rezumat. Regiunea nord-estică a României beneficiază de o densitate foarte ridicată a monumentelor tumulare, atribuite unor diverse comunități preistorice și istorice. Demersurile anterioare, întreprinse de echipa de față, au permis identificarea, cu ajutorul rezultatelor măsurătorilor LiDAR, al fotografiilor aeriene și al suporturilor cartografice vechi, a 1791 de monumente de acest tip. De regulă, movilele sunt amplasate pe terenuri înalte, alcătuind aranjamente oarecum liniare, dar sunt semnalate și situații excepționale, precum este cazul necropolei tumulare Borșa-La Cișmele, reprezentând subiectul lucrării prezente. Situl arheologic este inedit și nu prezintă similitudini în cadrul movilelor studiate anterior, fiind alcătuit din cel puțin șase monumente tumulare, dintre care se evidențiază două grupuri conectate cu ajutorul unor valuri de pământ, formând semi-cercuri. Ca urmare a documentării acestei situații au fost întreprinse cercetări de teren, ocazie cu care a fost semnalată prezența solului de culoare roșiatică. Acest aspect a fost semnalat doar pe suprafața celor patru movile aflate în conexiune, sugerând faptul că tumulii în cauză nu serveau drept gardieni ai unor morminte de înmușiere, ci au fost martorii unor ritualuri de incinerare impresionante. Astfel, obiectivul studiului de față este reprezentat de semnalarea prezenței necropolei în cauză în cadrul peisajului tumular din nord-estul României, ca prim pas în strategia de cercetare asumată.

Keywords: tumular necropolis, cremation, LiDAR, NE Romania.

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The territory of north-eastern Romania benefits of a very high density of burial mounds, belonging to various communities, dating from the Neolithic until medieval times³. If we were to summarize the history of *tumuli* research within this workspace, it should be noted that only few archaeological excavations have been conducted⁴, showing a predominance of sites belonging to the Bronze Age, especially to its earliest period, this being somewhat characteristic to the entire space located East of the Carpathians. However, we have to acknowledge that lately, throughout Romania, the investigations of burial mounds have been reignited, benefitting also of the usage of various interdisciplinary methods⁵. Prior to this approach, for the territory of interest, such initiatives have been undertaken by members of the present team, managing to obtain, among other, a detailed and up to date repertoire of all the mounds located in the Jijia River's catchment. Similar objectives were proposed by other scholars, but either for different geographical areas⁶, from different perspectives⁷, or relying solely on the topographical maps⁸. Usually, these studies take into consideration only the monuments with significant elevations (visible in the field, as well as on various cartographic and imagery supports), due to the lack of LiDAR (Light Detection and Ranging) data, thus leaving an important number of sites unaccounted for. In opposition, our study has relied on integrating both the topographical and military old maps, as well as the results of LiDAR measurements, including in our repertoire even the nearly flattened mounds, visible only with the help of laser scanning or aerial photographs. With this occasion we have managed to identify almost 1791 mounds only in the territory of Jijia River's catchment, an important conclusion of this endeavor being that most of the sites are arranged in large, concentrated groups, likely interconnected. The sites are predominantly found at higher altitudes, on hilltops or gentle slopes along river valleys. These groups often form linear or circular patterns, consisting of up to eight mounds, with one or two prominent *tumuli* followed by smaller, nearly flattened mounds.

While it is true that we managed to identify a pattern regarding the funerary mounds of NE Romania⁹, the analysis of LiDAR data has provided, also, exceptional situations. One of these cases is represented by the tumular necropolis of Borșa-La Cișmele, a novel discovery that represents the subject of the present paper. The site occupies approx. 15 ha, being located on the territory of Vlădeni administrative unit, in the north-eastern region of Iași County (Fig.1-

³ BURTĂNESCU 2002; NICULICĂ 2015; LÁSZLÓ 1994; MIHĂILESCU-BÎRLIBA 2022; LEVIȚKI 1994.

⁴ PETRESCU-DÎMBOVIȚA 1953; 1954; PETRESCU-DÎMBOVIȚA *et alii* 1955; DINU 1957; 1959a; 1959b; PETRESCU-DÎMBOVIȚA, DINU 1975; LÁSZLÓ 1976, etc.

⁵ HOECK *et alii* 2012; FRÎNCULEASA *et alii* 2015; ȘTEFAN *et alii* 2017; HEGYI 2018; ENEA *et alii* 2021; HEGYI *et alii* 2021; SÎRBU *et alii* 2021; ENEA *et alii* 2022; METZNER-NEBELSICK *et alii* 2023; DIACONU *et alii* 2024; TENCARIU *et alii* 2024, etc.

⁶ BRUDIU 1991; TOPOLEANU *et alii* 2008; ȚENȚEA, RAȚIU 2015; DIACONESCU *et alii* 2017; DIACONU 2022.

⁷ NICULIȚĂ 2020a; 2020b.

⁸ ȘOVAN 2016.

⁹ BRAȘOVEANU *et alii* 2023.

2). It is comprised out of six mounds, that can be categorized in three groups of two. Thus, we have identified two mounds with higher elevation (M1-2), and two groups, summing four monuments (M3-6), connected by earthworks (EW-1 and EW-2), shaping two semi-circles. The first, higher ones, are located outside the previous group (Fig.3-4). Regarding their morphometrical characteristics (Table 1), it is obvious that the four connected mounds present different specifics than the two other, outsider ones. The latter have altitudes between 2 m and 2,2 m, and maximum diameters of up to 40 m, while the other four are smaller (20-30 m D_{max}), with elevations that do not exceed 30 cm, making the monuments almost imperceptible for the naked eye.

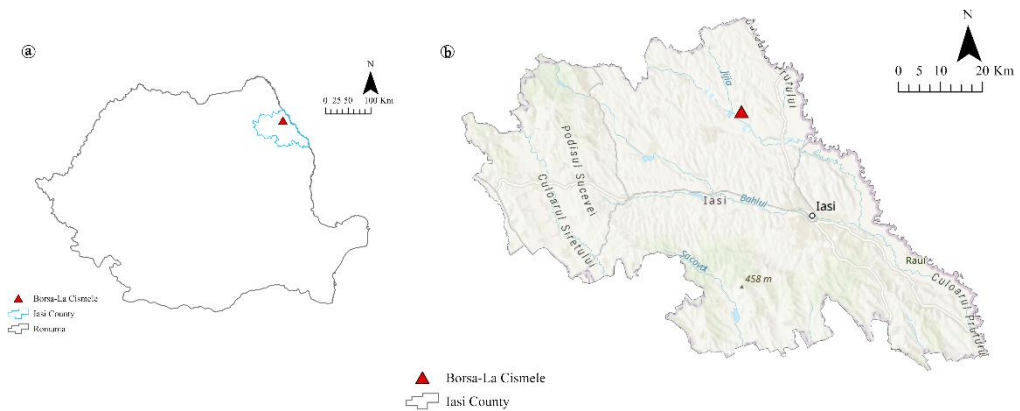


Fig.1. Localization of the archaeological site Borșa-La Cișmele within: **a**-the territory of Romania; **b**-the territory of Iași County.



Fig.2. Localization of the archaeological site Borșa-La Cișmele on the Topographical Map of Romania (1:25.000, 1984 edition).

At first glance, this represented an exquisite discovery, with no first-hand analogies in the territory of nowadays Romania, at least in the current state of research. The next step in our research was represented by a study of all of the available cartographic supports, followed by fieldwalks. The purpose of the latter was not only to obtain aerial photographs, or to identify archaeological material that could pinpoint the cultural-chronological attribution of the discovery, but also to get acquainted with the terrain conditions (accessibility, type of agriculture, type of property, etc.), in order to perform various non-invasive measurements (magnetometry, Electrical Resistivity mapping and Tomography).

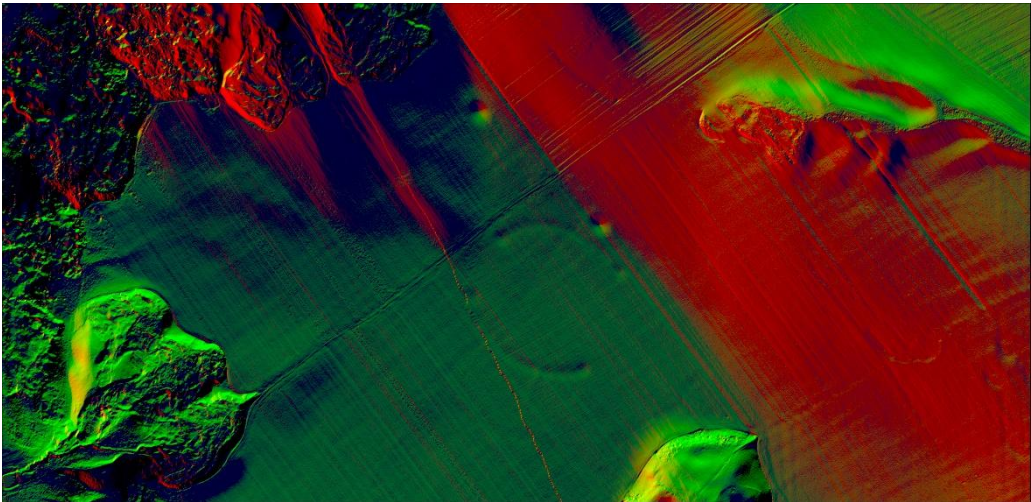


Fig.3. The necropolis Borșa-La Cișmele. *Principal Component Analysis of hillshading* (LiDAR-derived DEM 1x1 m; Relief Visualization Toolbox).

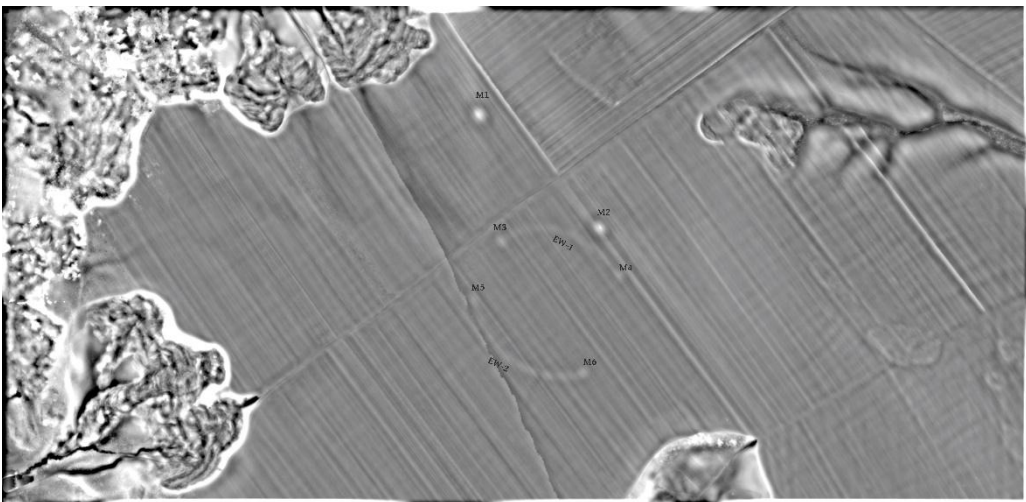


Fig.4. The necropolis Borșa-La Cișmele. *Local Dominance* (LiDAR-derived DEM 1x1 m; Relief Visualization Toolbox).

Table 1. Morphometrical characteristics of the archaeological structures of the necropolis Borșa-La Cișmele

Name	D _{max}	Elevation	Width	Length
M1	40 m	2,2 m		
M2	40 m	2 m		
M3	30 m	0,3 m		
M4	20 m	0,2 m		

M5	20 m	0,3 m		
M6	20 m	0,15 m		
EW-1		0,25 m	20 m	320 m
EW-2		0,25 m	15 m	365 m

At this point, the site of Borșa-La Cișmele became even more interesting, due to the presence of reddish-colored soil (Fig. 5-6), only on the surface of the four connected mounds, suggesting that the *tumuli* in question were not guarding inhumation burials, but were witnesses of an impressive cremation ritual.



Fig.5. Aerial view of the necropolis Borșa-La Cișmele (photo taken from NW).

So far, after a careful consideration of the scientific literature, it seems that such discoveries are not known for the territory of Romania, but surprisingly not even for the neighboring territories. The only similarities that our team has managed to identify are with the so-called mounds “with moustaches”¹⁰, dating back to the periods of the Saks, Huns and Türks, mostly known from the South Ural region of Kazakhstan¹¹, but having also isolated presences in Kalmykia, the Dnieper region, and Crimea¹². However, the afore-mentioned monuments consist, usually, of a burial mound, from which two arched stone ridges (the “moustaches”) extend¹³, thus making this an improbable analogy. Other assemblies of mounds

¹⁰ In this sense, many thanks are due to Denis Topal, for providing valuable bibliography regarding the subject.

¹¹ BEKBASSAR 1999; SYRLYBAEV *et alii* 2016; BEISENOV *et alii* 2018a; 2018b; GRUDCHKO 2017; 2018; 2022.

¹² BOTALOV *et alii* 2006; TIHOMIROV 2020; TIHOMIROV *et alii* 2020.

¹³ BEISENOV *et alii* 2018a, fig.2; BEISENOV *et alii* 2018b, fig.2; GRUDCHKO 2018, fig.2-4; GRUDCHKO 2022, fig.2.

and earthworks are found in the territory of the Republic of Moldova¹⁴, but they usually present almost rectangular forms (with one side missing), all of the angles being marked by the presence of mounds.



Fig.6. Burnt soil visible on the surface of M3.

At this point, given those set out above, it is impossible to postulate any hypotheses regarding the cultural-chronological attribution of the necropolis in question. Thus, the following methodological steps will imply obtaining as much information as possible, with the help of non-intrusive methods: acquiring a Digital Surface Model for the entire area, as well as performing total field and vertical gradient magnetometry, Electrical Resistivity mapping and Tomography. This multi-faceted approach was selected in order to ensure the detection of as many types of archaeological anomalies as possible, since the contrast, as well as the signals, offered by the archaeological structures differ, depending on the prospecting method used, climate and environmental factors, etc. Also, another important detail is represented by the fact that at the moment, the site of *Borșa-La Cișmele* is not registered under the National Archaeological Repertoire, being located on agricultural fields. Thus, its inclusion in the aforementioned instrument is most important.

¹⁴ TOPAL *et alii* 2019, fig.9.

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References

- BEISENOV, A.Z., TORGOEV, A.I., DUYSENBAI, D.B., AKHIYAROV, I.K. 2018a. The mound with mustaches Atasu-2. *ПОВОЛЖСКАЯ АРХЕОЛОГИЯ*, 3(25): 103-117.
- BEISENOV, A.Z., HASENOVA, B.M., AKHIYAROV, I.K., DUYSENBAI, D.B. 2018b. КУРГАН С «УСАМИ» КАБАНТАУ В ЦЕНТРАЛЬНОМ КАЗАХСТАНЕ. *ВЕСТНИК ДАГЕСТАНСКОГО НАУЧНОГО ЦЕНТРА*, 71: 64-76.
- BEKBASSAR, N.M. 1999. „Mustached” Barrows as the Horizon Solar Calendars of Early Nomads of Kazakhstan. In: C. Esteban, J.A. Belmonte (eds.), *OXFORD VI AND SEAC 99. <<Astronomy and cultural diversity>>. Proceedings of the International Conference << OXFORD VI AND SEAC 99>> held in Museo de la Ciencia y el Cosmos, La Laguna, June 1999*, 91-98.
- BRAȘOVEANU, C., ASĂNDULESEI, A., PÎRNĂU, R.G., BRUNCHI, R.A. 2023. From One to Many: LiDAR-based Targeted Detection and Spatial Distribution of the Burial Mounds from Bahluiet River Catchment (NE Romania). In: V. Diaconu, A. Gafincu (eds.), *The Bronze Age in Eastern Europe. Multidisciplinary approaches*, Brăila-Piatra-Neamț: Istros Publishing House of the Museum of Brăila Carol I-Constantin Matasă Publishing House, 61-86.
- BRUDIU, M. 1991. Complexe funerare tumulare din sud-estul Moldovei. *Peuce. Studii și comunicări de istorie veche, arheologie și numismatică*, X(1): 41-56.
- BURTĂNESCU, F. 2002. *Epoca timpurie a Bronzului între Carpați și Prut cu unele contribuții la problemele perioadei premergătoare epocii bronzului în Moldova*, Bibliotheca Thracologica, XXXVII București.
- DIACONESCU, D., BUNOIU, V., VLASE, D., HEGYI, A. 2017. Cartarea movilelor de pământ din Banatul de Câmpie. Studiu de caz: Sânpetru Mare (comuna Sânpetru Mare, județul Timiș). *Patrimonium Banaticum*, VII: 37-97.
- DIACONU, D. 2022. Tumulii din zona Neamțului. O privire sintetică asupra contribuțiilor de până în prezent. *ISTROS*, XXVIII: 379-402.
- DIACONU, V., GEREA, A., TĂTARU, E.-N., GRECU, B., ZAHARIA, B. TOMA-DĂNILĂ, D., MIHAI, A.E., CERBU, B. 2024. Târgu Neamț, jud. Neamț. Punct: Bâta Cioroiului. *Cronica Cercetărilor Arheologice din România. Campania 2023*, Târgu Mureș: Institutul Național al Patrimoniului.
- DINU, M. 1957. Șantierul arheologic Valea Lupului. *Materiale și Cercetări Arheologice*, III, 161-178.
- DINU, M. 1959a. Șantierul arheologic de la Valea Lupului. *Materiale și Cercetări Arheologice*, V, 247-256.

DINU, M. 1959b. Șantierul arheologic de la Valea Lupului. *Materiale și Cercetări Arheologice*, VI, 203-212.

ENEA, S.-C., BOGHIAN, D., POPOVICI, S., TENCARIU, F.-A., ASĂNDULESEI, A., BRAȘOVEANU, C., CIOBANU, I., SIMALCSIK, A. 2021. Considerații preliminare referitoare la cercetarea tumulului T1/2021 de la Crucea (com. Lungani, jud. Iași, România). In: S. Forțiu (ed.), *ARHEOVEST IX2 -In honorem Valeriu Sîrbu - Interdisciplinaritate în Arheologie și Istorie*, Cluj-Napoca: Editura Mega, 579-607.

ENEA, S.-C., BOGHIAN, D., TENCARIU, F.-A., POPOVICI, S., ASĂNDULESEI, A., BRAȘOVEANU, C., BRUNCHI, R.-A., CIOBANU, I., AGULNIKOV, S., SIMALCSIK, A., BOBE, S.D. 2022. Considerații preliminare privitoare la rezultatele cercetărilor arheologice din tumulul nr.1 de la Lungani-După Vie (com. Lungani, jud. Iași). In: S. Forțiu (ed.), *ARHEOVEST X, In memoriam Felix Milleker (1858-1942): Interdisciplinaritate în Arheologie și Istorie*, Timișoara: Editura Istros, 103-130.

FRÎNCULEASA, A., PREDA, B., HEYD, V. 2015. Pit-Graves, Yamnaya and Kurgans along the Lower Danube: Disentangling IVth and IIIrd Millennium BC Burial Customs, Equipment and Chronology. *Praehistorische Zeitschrift*, 90(1-2): 45-113.

GRUDOCHKO, I. 2017. Mounds with “moustaches”. On the ethnocultural situation in the Ural-Kazakhstan steppes during the V-VII centuries AD. *The UFA Archaeological Herald*, 17: 42-49.

GRUDOCHKO, I.V. 2018. Az uráli és kazah sztyeppék 'bajszos' kurgánjai (tipológia és kronológia). In: T. Attila, A.S. Zelenkov (eds.), *3. Nemzetközi Korai Magyar Történeti és Régészeti Konferencia. Budapest, 2016. június 6-10*, Studia ad Archaeologiam Pazmaniensia, Budapest: Martin Opitz Kiadó.

GRUDOCHKO, I.V. 2022. Geoarchaeological Studies of Kurgans with Moustaches: Achievements and Prospects. In: N. Ankusheva, I.V. Chechushkov, I. Stepanov, M. Ankushev, P. Ankusheva (eds.), *Geoarchaeology and Archaeological Mineralogy. Proceedings of the 7th Geoarchaeological Conference, Miass, Russia, 19-23 October 2020*, Cham: Springer, 335-354.

HEGYI, A. 2018. *Aplicarea metodelor specific geostiintelor în cercetări arheologice din sud-vestul României*, PhD thesis, West University of Timișoara, Timișoara.

HEGYI, A., DIACONESCU, D., URDEA, P., SARRIS, A., PISZ, M., ONACA, A. 2021. Using Geophysics to Characterize a Prehistoric Burial Mound in Romania. *Remote Sensing*, 13, 842.

HOECK, V., IONESCU, C., METZNER-NEBELSICK, C., NEBELSICK, L.D. 2012. Mineralogy of the ceramic slags from the Bronze Age funerary site at Lăpuș (NW Romania). *Geological Quarterly*, 56(4): 649-664.

LÁSZLÓ, A. 1976. Începuturile primei vîrste a fierului pe teritoriul Moldovei – Unele rezultate și probleme. *Cercetări istorice*, VII, 57-76.

LÁSZLÓ, A. 1994. *Începuturile Epocii Fierului la Est de Carpați. Culturile Gáva-Holihradý și Corlăteni-Chișinău pe teritoriul Moldovei*, București: The Romanian Institute of Thracology.

LEVIȚKI, O. 1994. Culturile din epoca Hallstattului timpuriu și mijlociu (Cultures of the Early and Middle Hallstatt). *Thraco-Dacica*, XV(1-2): 159-214.

METZNER-NEBELSICK, C., MASSY, K., NEBELSICK, L.D., KACSO, C. 2023. A Bronze Age feasting hall in Lăpuș, jud. Maramureș – channelled pottery and its chronology seen from northwest Romania. In: A. Bălărie, B. Heeb, C. Metzner-Nebelsick, L. Nebelsick (eds.), *Local Traditions, Culture Contact or Migration? The Pottery of Cruceni – Belegiș – Gáva Type as a Cultural Marker in Southeast Europe during the Late Bronze Age*, Bibliotheca Historica et Archaeologica Banatica LIX, Cluj-Napoca: Editura Mega, 99-126.

MIHĂILESCU-BÎRLIBA, V. 2022. *Cimitirele antice de la Nemțisor și Târzia din județul Neamț. Contribuții privitoare la cunoașterea obiceiurilor funerare din Cultura tumulilor carpatici*, Cluj-Napoca: Mega Publishing House.

NICULICĂ, B.P. 2015. *Epoca Bronzului în Podișul Sucevei*, Suceava: Editura Karl A. Romstorfer.

NICULIȚĂ, M. 2020a. Geomorphometric Methods for Burial Mound Recognition and Extraction from High-Resolution LiDAR DEMs, *Sensors*, 20, 1192. <https://doi.org/10.3390/s20041192>.

NICULIȚĂ, M. 2020b. Burial mound detection using geomorphometry and statistical methods: pixels versus objects. In: M. Alvioli, I. Marchesini, L. Melelli, P. Guth (eds.), *Proceedings of the Geomorphometry 2020 Conference*, Perugia: CNR Edizioni, 26-29.

PETRESCU-DÎMBOVIȚA, M. 1953. Contribuții la problema sfârșitului epocii bronzului și începutului epocii fierului în Moldova. *Studii și Cercetări de Istorie Veche*, IV(3-4), 443-486.

PETRESCU-DÎMBOVIȚA, M. 1954. Șantierul arheologic Hlincea-Iași, *Studii și Cercetări de Istorie veche*, V(1-2), 233-255.

PETRESCU-DÎMBOVIȚA, M., NIȚU, A., ZAHARIA, E., DINU, M. 1955. Șantierul arheologic Hlincea-Iași, *Studii și Cercetări de Istorie Veche*, VI(3-4), 687-712.

PETRESCU-DÎMBOVIȚA, M., DINU, M. 1975. Le trésor de Băiceni (dép. de Jassy). *DACIA, N.S.*, XIX, 105-124.

ȘÎRBU, V., ȘTEFAN, M.-M., ȘTEFAN, D. 2021. *A Monumental Hellenistic Funerary Ensemble at Callatis on the Western Black Sea. The Documaci Tumulus*, I, Oxford: Archaeopress.

SYRLYBAEV, M., UMITKALIEV, U., OMIRBEKOVA, Z., TLEUGABULOV, D., OMAROV, G. 2016. Barrows „with Moustaches” and Other Archaic Beliefs of Kazakhs. *Anthropologist*, 26(1.2): 127-130.

ȘOVAN, O. L. 2016. *Repertoriul arheologic al județului Botoșani*, 2nd edition, Botoșani: Muzeul Județean Botoșani.

ȘTEFAN, M.-M., ȘÎRBU, V., ȘTEFAN, D. 2017. Tumuli, roads and plots. Decoding the monumental funerary space of the 4th-3rd centuries BC Kallatis. *Journal of Ancient History and Archaeology*, 4(1): 52-84.

TENCARIU, F.-A., ENEA, S.-C., ASĂNDULESEI, A., BRAȘOVEANU, C., BRUNCHI, R.-A., POPOVICI, S., CIOBANU, I., BOGHIAN, D., SIMALCSIK, A. 2024. Zmeu, com. Lungani, jud. Iași.

Punct: Dealul Sidor/Lanul Mare. *Cronica Cercetărilor Arheologice. Campania 2023*, București/Târgu-Mureș: Institutul Național al Patrimoniului, 773-781.

TOPAL, D., VORNIC, V., POPOVICI, S., 2019. Considerații preliminare asupra peisajului tumular de pe teritoriul Republicii Moldova. *Arheologia Preventivă în Republica Moldova*, IV: 6-26.

TOPOLEANU, F., JUGĂNARU, G., MICU, C., AILINCĂI, S., MIHAIL, F., STĂNICĂ, A., COSTEA, I. 2008. *Inventarierea siturilor arheologice din județul Tulcea. Studiu de caz: mormintele tumulare*, I, Tulcea: Institutul de Cercetări Eco-Muzeale Tulcea.

ȚENȚEA, O., RAȚIU, A. 2015. Repertoriul peisajului funerar din zona confluenței Siretului cu Dunărea – studiu preliminar. *Cercetări Arheologice*, XXII: 189-270.



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