ZIRIDAVA

STUDIA ARCHAEOLOGICA

29

2015

MUSEUM ARAD

ZIRIDAVA
STUDIA ARCHAEOLOGICA

29
2015

Editura MEGA
Cluj-Napoca
2015

MUSEUM ARAD

In Romania, the periodical can be obtained through subscription or exchange, sent as post shipment, from Museum Arad, Arad, Piata G. Enescu 1, 310131, Romania.
Tel. 0040–257–281847.

ZIRIDAVA
STUDIA ARCHAEOLOGICA

Any correspondence will be sent to the editor:
Museum Arad
Piata George Enescu 1, 310131 Arad, RO
e-mail: ziridava2012@gmail.com

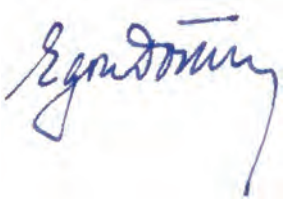
Layout: Francisc Baja, Florin Mărginean, Victor Sava

ISSN 2392–8786

Editura Mega | www.edituramega.ro
e-mail: mega@edituramega.ro

Contents

This volume is dedicated to the memory of Egon Dörner (1925–1993)



Archaeozoological Data Regarding the Osteological Material from the Baden Settlement in Sântana "Cetatea Veche" (Arad County)[1]

Xenia Pop

Abstract: The archaeofauna material discovered in the Baden settlement in Sântana "Cetatea Veche" has been uncovered during the archaeological excavation campaigns performed in 2009 and 2011. The 123 determined bone remains belong both to domestic and wild species. Traces of human processing have been identified on some of the fragments. The proportion between domestic and wild animals is of 60.9 to 39.8 %, according to the number of remains (NISP) and of 91 to 9 %, according to the minimum number of estimated individuals (MNI). The following species have been identified through the archaeozoological analysis: *Bos taurus L., Ovis et Capra, Sus domesticus Erxl., Equus caballus L., Canis familiaris L.,* and *Cervus elaphus L*.

Keywords: archaeozoology, Baden Culture, bones, taphonomy, the Copper Age.

Introduction, materials, and methods

The archaeological campaigns performed in 2009 and 2011 in the Baden-type settlement from Sântana "Cetatea Veche" dated to the end of the Copper Age has revealed remains from animals besides other artifacts. The material was found in sections S1 and S4.

The bones were separated from the other materials, labeled, packed, and sent to the Archaeozoology Laboratory of the Veterinary Medicine Faculty in Cluj-Napoca. The working methodology employed consisted of sorting out the bone remains by removing the fragments that could not be identified, grouping the rest of the bones according to anatomical segments, followed by the anatomical identification of the bones and typology according to species, quantifying the data (NISP, MNI), estimating the slaughtering ages when the animals were sacrificed, determining the gender, and identifying the taphonomy. With the aid of data provided by osteometry I was able to calculate the shoulder hight of one of the individuals from the capriovids group.

Description of the osteological material

The archaeozoological analysis has indicated that the remains belong to the following groups of species: bovine, ovicaprid, swine, equine, canidae, and cervidae (Fig. 6).

The lot is fragmentary, with few bones preserved intact. Some of the items show traces of processing, cutmarks, or scratching on the surface, while others were burnt.

Out of a total of 270 bone fragments, just 123 have been determined, representing 45.6 % of the total identified (Tab. 1). The majority of bones come from domestic mammals (60.9 %), as indicated in the table below:

Tab. 1. Proportion of bones in the sample.

Species	NISP	%	%	MNI	%
Bos taurus L. (Domestic cattle)	21	17		1	9
Ovis aries L./Capra hircus L. (Capriovids)	13	10.56		1	9
Ovis aries L. (Sheep)	3	2.4		1	9

[1] English translation: Ana M. Gruia.

Species	NISP	%	%	MNI	%
Sus domesticus Erxl. (Domestic swine)	36	29.3		5	45.45
Equus caballus L. (Equinae)	1	0.8		1	9
Canis familiaris L. (Canidae)	1	0.8		1	9
Total domestic animals	**75**	100	**60.9**	**10**	**91**
Cervus elaphus L. (Cervidae)	49	39,8		1	9
Total wild animals	**49**	100	**39.8**	**1**	**9**
Total identified remains	**123**	100	**45.6**	**11**	100
Unidentified large-size animal	femur 2 humerus 1 long bone 1 vertebra 2 radius 1 mandible 1 skull 2 rib 1				
Unidentified small/medium-size animal	mandible 1 rib 12 vertebra 8 long bone 5 skull 6 dentition 1				
Unidentified	102				
Total	270				

The most representative species among the domestic animals is domestic swine (*Sus domesticus Erxl.*). It includes 36 remains of an estimated a mni of five individuals (Tab. 1, Fig. 6). According to the stage of eruption and dental wear, three individuals had an estimated age of less than a year and another individual between 4 and 6 years[2]. The majority of identified bone fragments were part of the axial skeleton (Tab. 3). Other identified fragments were part of the neurocranium and mandible, some were pieces of the splachnocranium, fragmentary vertebrae, and some isolated elements of dentition. The appendicular skull is represented by one calcaneum and two fragmentary scapulae (Fig. 1).

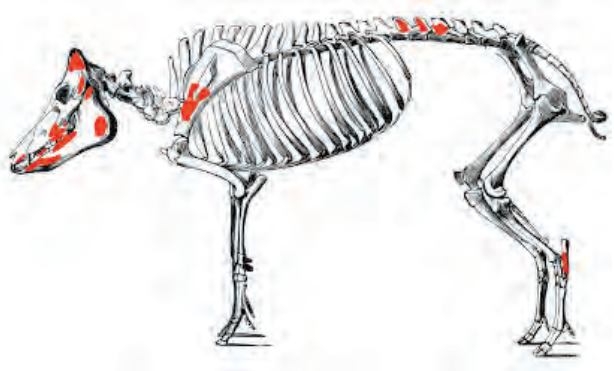


Fig. 1. Highlighted segments (in red) represent the identified fragments: *Sus domesticus Erxl.*

Bovine (*Bos taurus L.*) were second according to the number of fragments, with a lot consisting of 21 bone fragments, representing 17 % of all determined remains (Tab. 1, Fig. 6). The bones belonged to an individual estimated as mature[3] (according to the ossification degree of the epiphyses). From this species I have determined remains both part of the cranial skeleton and of the postcranial skeleton (Fig. 2). The following anatomical segments have been identified: fragments of horncore, vertebrae (atlas, cervical, lumbar, and sacral vertebrae), scapula (glenoid angle), mandible fragment, isolated

[2] Schmid 1972, 77; Haimovici, Teodoerescu 1995, 200.
[3] Schmid 1972, 75.

dentition, one distal humerus, one pelvis fragment (ilium), one distal metatarsus, tarsalia (astragal, calcaneus, the small cuneiform), and proximal and secondary phalanges.

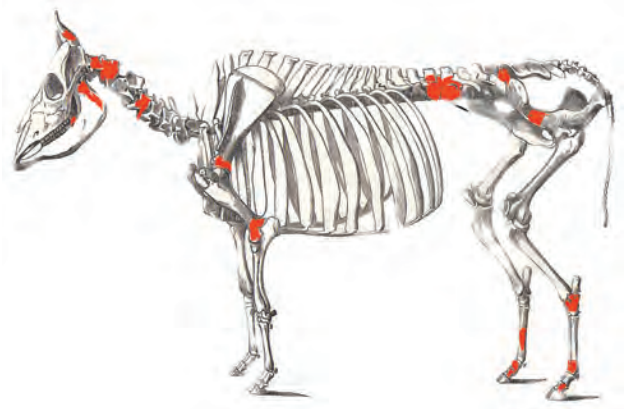


Fig. 2. Highlighted segments (in red) represent the identified fragments: *Bos taurus L.*

The group of capriovids includes 16 remains part of an estimated a mni number of two individuals. The morphological aspects of the studied bone fragments indicate that one of the individuals was a female of the Ovis aries L. genus. The differentiation of this individual was made on the basis of three fragments[4]: one mandible, one astragalus, and one primary phalanx. According to the osteometric measurements taken from the astragalus, the shoulder height of the sheep could be recalculated (Tab. 2). The obtained value was of 61 cm[5]. The slaughtering age when the animal was sacrificed could be determined with the aid of data provided by dental eruptions and the degrees of dental wear, and also by the fusion of long bone epiphyses[6]. I have thus estimated an age of between 4 and 5 years for the Ovis aries L. species (sheep) and of 3 years for the other individual generally attributed to the capriovids group. The attribution to certain gena of some remains could not be performed (mandible, scapula, femur, one diaphysis tibia, lumbar vertebra, isolated dentition, one diaphysis metatarsus, and one proximal metacarpus). They were included in the ovis / capra category (Tab. 3).

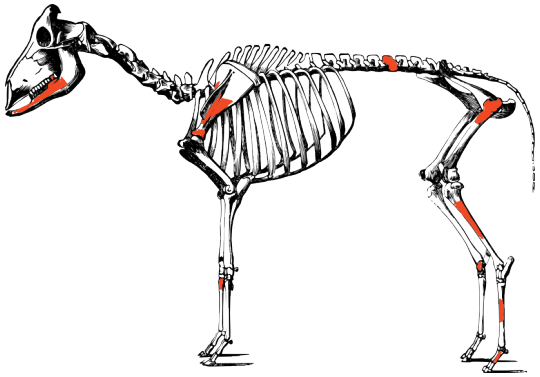


Fig. 3. Highlighted segments (in red) represent the identified fragments: *Ovis et Capra*

Tab. 2. Osteometric data for the astragalus[7]

Part	**1**	**2**	**3**	**4**	**5**	**6**
L	27	26	15	15	17	61

1 – maximal outer length
2 – maximal inner length
3 – maximal outer width
4 – maximal inner width
5 – width of the distal trochlea
6 – height according to Teichert

[4] Boessneck 1969, 331–358; Halstead *et al.* 2002, 548.
[5] Udrescu *et al.* 1999, 97.
[6] Schmid 1972, 75, 77.
[7] Desse *et al.* 1986, code 60.

Equine (*Equus caballus L.*) and canidae (*Canis familiaris L.*) include one bone each (Fig. 4, 5, 6). From *equus caballus L.* there is one lower premolar, while one secondary metatarsus was attributed to the *Canis familiaris L.* species. The small number of determined fragments does not allow for any strong conclusion on the age when the individuals of the two species have been sacrificed.

The only wild species identified in the studied sample is deer (*Cervus elaphus L.*). Fragments of horncore have been determined.

Fig. 4. Part of the identified head skeleton (in red): *Equus Caballus L*

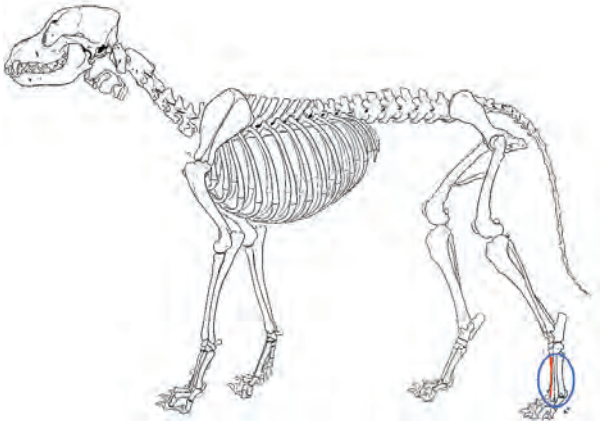


Fig. 5. Part of identified skeleton (in red): *Canis familiari L.*

Tab. 3. Bone fragments identified in the sample

Bones / **Species**		***Bos taurus L.***	***Ovis et Capra***	***Sus scrofa doemsticul Erxl.***	***Equus caballus L.***	**Canis familiaris L.**	**Cervus elaphus L.**
Axial skeleton	Cornua	2					49
	Cranium			3			
	Maxilla			4			
	Mandibula	1	2	13			
	Dentes	1	5	9	1		
	Atlas	1					
	Cervical v.	1					
	Lumbar v.	2	1	3			
	Sacrum	1					
Appendicular skeleton	Scapula	1	2	2			
	Humerus	1					
	Metacarpus		1				
	Pelvis	1					
	Femur		1				
	Tibia		1				
	Astragalus	1	1				
	Calcaneus	1		1			
	Tarsalia	1					
	Metatarsus	2	1			1	
	F1	2	1				
	F2	2					

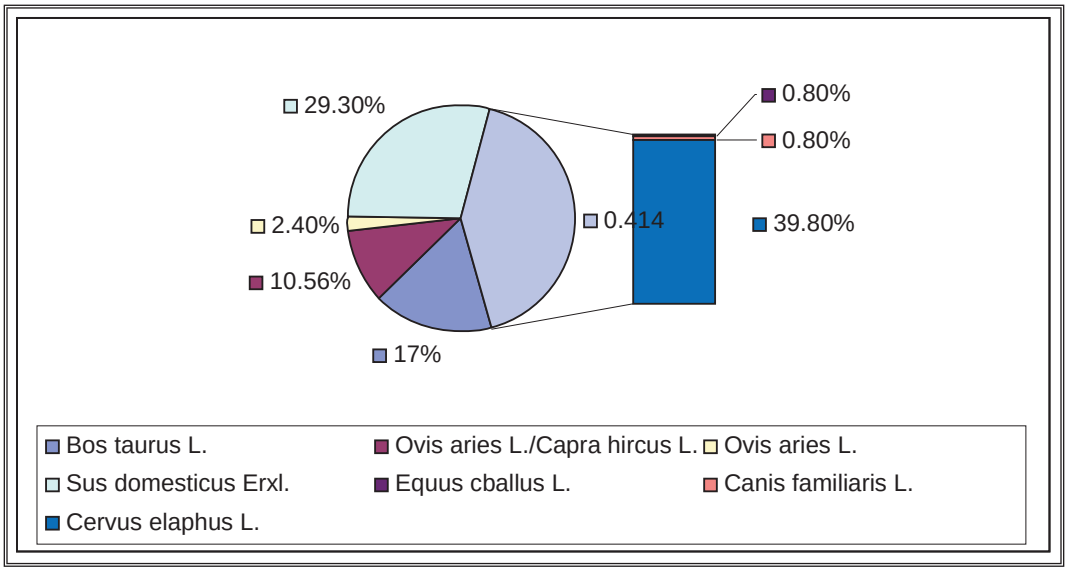


Fig. 6. Percentages of the species in the sample (according to NISP)

Taphonomic analysis

Traces on anthropic interventions could be noted on some of the bones in the sample under analysis. Due to the high degree of fragmentation, some bones could not by attributed to any species. Cut marks[8] were identified on the ventral part of the ilium and on one fragment of the sacral vertebra of a bovine individual (Fig. 7a). Cuts marks were also noted on the level of the transversal processes in one of the lumbar vertebrae of a domestic pig (*Sus domesticus Erxl.*). One fragment of a tibia included in the *ovis / capra* category displayed cut marks on the lateral side of the diaphysis, in the middle of the dorsal part (Fig. 7b). Traces of scraping were located on the surface of an undetermined fragment. Such marks are usually formed while an animal's carcass is cut, i.e. when the meat is removed, the articulations broken, the carcass eviscerated etc.

Two other bone remains display traces of processing; the wall of one mandible fragment had been notched and one pointy fragment was created from the distal extremity of an capriovid metapod (Fig. 8a, b). The fragment resembles a polished arrowhead. Similar Aeneolithic tools were discovered in the south-western part of Hungary in Kaposújlak – Várdomb (the Pécel – Baden Culture) and on sites in southern Moldavia belonging to the Cucuteni – Ariușd and Stoicani – Aldeni cultures[9].

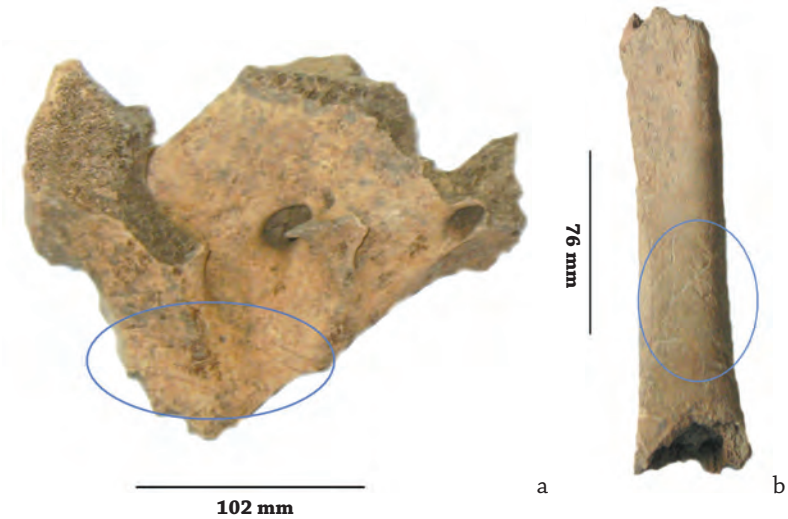


Fig. 7. Cut marks: a) fragment of sacral vertebra – *Bos taurus L.*; b) diaphysis tibia – *Ovis & Capra*

[8] For the terminology see Lauwerier 1988, 182–212.
[9] Gál 2011, 139–140; Beldiman *et al.* 2014, 115–147.

Fig. 8. Bones with traces of processing: a) tip made on an capriovid metapod; b) fragment of notched mandible from an unidentified animal.

Conclusions

Due to the material's state of preservation and to the nature of the determined remains, little data can be extracted regarding the animal populations in the Baden settlement from Sântana. The majority of identified fragments belong to the thoracic and pelvic member respectively; domestic swine are an exception, as their determined remains belong to the cranial skeleton (Tab. 3).

Few data can only be extracted on the morphological characteristics and the height of the animals as well; the size of a single individual could be recalculated, on the basis of metric data taken from an entirely preserved sheep astragalus. The calculated value was of 61 cm.

With the id of data provided by dental eruption and wear degree, and of those provided by the fusion of the long bone epiphyses, I was able to distinguish between two age groups: young and mature. Bovine and capriovid individuals were slaughtered sometime at maturity. In the case of swine, three individuals were younger than 1 year and another was between 4 and 6 years.

For the other groups of species (equidae, canidae, and cervidae) the conclusions are irrelevant and one can only state their presence in the sample.

Xenia Pop
University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca
Cluj-Napoca, ROU
ravenheartr@gmail.com
xenia.pop@usamvcluj.ro

BIBLIOGRAPHY

Beldiman *et al*. 2014 — C. Beldiman, Sztancs Diana-Maria, C. Ilie, *The Danubios Project. Eneolithic Osseous Materials Artefacts Discovered in Southern Moldavia.* In: C. Preoteasa, C. D. Nicola (Eds.): L`impact anthropique sur l`environnement durant le Néo-Énéolitique du Sud-Est de l`Europe: in honorem dr. Gheorghe Dumitroaia. Musée d`Histoire et d`Archéologie de Piatra-Neamț, Centre International de Recherche de la Culture Cucuteni. Piatra – Neamț 2014, 115–147.

Boessneck 1969 — J. Boessneck, *Osteological Differences between Sheep (Ovis aries Linné) and Goat (Capra hircus Linné)*. In: D. Bronthwell, G. Clark (Eds.), Science and Archaeology. London 1969, 331–358.

Desse *et al*. 1986 — J. Desse, L. Chaix, N. Desse-Berset, *"Ostéo" Base-Réseau de donées ostéometriques pour l`archéozoologie. Procédures, codages, exploitation des donnés, organisation du réseau*. Paris 1986.

Gál 2011 — E. Gál, *Prehistoric antler-and bone tools from Kaposújlak-Várdomb (South-Western-Hungary) with special regard to the Early Bronze Age implements,* In: J. Baron, B. Kufel-Diakowska (Eds.), Written in Bones. Studies on technological and social contexts of past faunal skeletal remains. Wroclaw 2011, 137–164.

Haimovici, Teodorescu 1995 — S. Haimovici, M. Teodorescu**,** *Studiul arheozoologic al materialului descoperit în două situri (Varnița și Silište) de la Poiana – Dulcești (jud. Neamț) aparținând dacilor liberi (sec II–III d.Hr.).* Memoria Antiquitas XX, 1995, 195–208.

Halstead *et al*. 2002 — P. Halstead, P. Collins, V. Isaakidou**,** *Sorting the Sheep from the Goats: Morphological Distinctions between the Mandibles and Mandibular Teeth of Adult Ovis and Capra*. Journal of Archaeological Science 29, 2002, 245–553.

Lauwerier 1988 — R.C.G.M. Lauwerier, *Animals in Roman Times in the Dutch Eastern River Area*. Amersfoort 1988.

Schmidt 1972 — E. Schmid, *Atlas of Animal Bones. For Prehistorians, Archaeologists and Quaternary Geologists*. Amsterdam 1972.

Udrescu *et al*. 1999 — M. Udrescu, L. Bejenaru, C. Hrișcu, *Introducere în arheozoologie*. Iași 1999.

Abbreviations

Acta Ant et Arch Suppl	Acta Antiqua et Archaeologica Supplementum. Szeged.
AAC	Acta Archaeologica Carpathica. Krakow.
ACMIT	Anuarul Comisiunii monumentelor istorice. Secţia pentru Transilvania. Cluj.
ActaArchHung	ActaArchHung Acta Archaeologica Academiae Scientiarum Hungaricae. Budapest.
AEM	Archäologische Epigraphische Mitteilungen aus Österreich-Ungarn.
AIIA Cluj	Anuarul Institutului de Istorie şi Arheologie. Cluj.
AMP	Acta Musei Porolissensis. Zalău.
ATF	Acta Terrae Fogarasiensis. Făgăraş.
ATS	Acta Terrae Septemcastrenses. Sibiu.
Agria	*Agria. Annales Musei Agriensis*. Az egri Dobó István Vármúzeum évkönyve. Eger.
AnB S.N.	Analele Banatului. Timişoara.
ArchÉrt	Archaelogiai Értesítő. A Magyar Régészeti és Művészettörténeti Társulat tudományos folyóirata. Budapest.
Arh. Pregled	Arheološki Pregled. Arheološko Društvo Jugoslavije. Beograd.
AM	Arheologia Moldovei. Iaşi.
AMN	Acta Musei Napocensis. Cluj-Napoca.
ArchRozhl	Archeologické Rozhledy. Praga.
ASMB	Arheologia Satului Medieval din Banat. Reşiţa 1996.
BAM	Brvkenthal Acta Mvsei. Sibiu.
BAR Int. Ser.	British Archaeological Reports. International Series. Oxford.
BCMI	Buletinul Comisiunii Monumentelor Istorice.
BerRGK	Bericht der RömischGermanischen Kommission, Frankfurt a. Main.
BHAB	Bibliotheca Historica et Archaeologica Banatica. Timişoara.
BMB. SH	Biblioteca Muzeului Bistriţa. Seria Historica. Bistriţa Năsăud.
BMI	Buletinul Monumentelor Istorice, Bucureşti.
BMN	Bibliotheca Musei Napocensis. Cluj-Napoca.
BMMK	A Békés Megyei Múzeumok Közleményei. Békéscsaba.
BMMN	Buletinul Muzeului Militar Naţional, Bucureşti.
BThr	Bibliotheca Thracologica. Institutul Român de Tracologie, Bucureşti.
CAB	
CAH	Communicationes Archaeologicae Hungariae. Budapest.
Carpica	Carpica. Muzeul Judeţean de Istorie şi Arheologie Bacău. Bacău.
CAMNI	Cercetări Arheologice. Muzeul de Istorie al R. S. România/Muzeul Naţional de Istorie. Bucureşti.
CCA	*Cronica cercetărilor arheologice* (*din România*), 1983–1992 *sqq*. (şi în variantă electronică pe *http://www.cimec.ro/scripts/arh/cronica/cercetariarh.asp*).
CCA 1995 [1996]	C. Stoica (red. şi coord.), *CCA. Campania 1995. A XXX-a sesiune naţională de rapoarte arheologice, Brăila, 2–5 mai 1996*. [Bucureşti] [1996].
CCA 1996 [1997]	C. Stoica (red. şi coord.), *CCA. Campania 1996. A XXXI-a sesiune naţională de rapoarte arheologice, Bucureşti, 12–15 iunie 1997*. [Bucureşti] [1997].
CCA 1997 [1998]	C. Stoica (red. şi coord.), *CCA. Campania 1997. A XXXII-a sesiune naţională de rapoarte arheologice, Călăraşi, 20–24 mai 1998*. [Bucureşti] [1998].
CCA 1998 [1999]	C. Stoica (red. şi coord.), *CCA. Campania 1998. A XXXIII-a sesiune naţională de rapoarte arheologice, Vaslui, 30 iunie–4 iulie 1999*. [Bucureşti] [1999].
CCA 2000 (2001)	M. V. Angelescu, C. Borş, I. Oberländer-Târnoveanu (Ed.), *CCA. Campania 2000. A XXXV-a sesiune naţională de rapoarte arheologice, Suceava, 23–27 mai 2001*. Bucureşti 2001.

CCA 2001 (2002)	M. V. Angelescu, C. Borş, I. Oberländer-Târnoveanu, F. Vasilescu (Ed.), *CCA. Campania 2001. A XXXVI-a sesiune naţională de rapoarte arheologice, Buziaş, 28 mai–1 iunie 2001*. Bucureşti 2002.
CCA 2003 (2004)	M. V. Angelescu, I. Oberländer-Târnoveanu, F. Vasilescu (Ed.), *CCA. Campania 2003. A XXXVIII-a sesiune naţională de rapoarte arheologice, Cluj-Napoca, 26–29 mai 2004*. Bucureşti 2004.
CCA 2006 (2007)	M. V. Angelescu, F. Vasilescu (Ed.), *CCA. Campania 2006. A XLI-a sesiune naţională de rapoarte arheologice, Tulcea, 29 mai – 1 iunie 2006*. Bucureşti 2007.
CCA 2008 (2009)	M. V. Angelescu, I. Oberländer-Târnoveanu, F. Vasilescu, O. Cîrstina, G. Olteanu (Ed.), *CCA. Campania 2008. A XLIII-a sesiune naţională de rapoarte arheologice, Târgovişte, 27–30 mai 2009* (= *Valachica* 21–22, 2008–2009). Târgovişte 2009.
CCA 2013 (2014)	Institutul Naţional al Patrimoniului (Ed.), *CCA. Campania 2013. A XLVIII-a sesiune naţională de rapoarte arheologice, Oradea, 5–7 iunie 2014*. [Bucureşti] 2014.
CCA 2014 (2015)	Institutul Naţional al Patrimoniului (Ed.), *CCA 2015. Campania 2014. A XLIX-a sesiune naţională de rapoarte arheologice, Piteşti, 28–30 mai 2015, Muzeul judeţean Argeş*. [Bucureşti] 2015.
CRSCRCR	Coins from Roman sites and collections of Roman coins from Romania. Cluj-Napoca.
Dacia N.S.	Dacia. Revue d'archéologie et d'histoire ancienne. Nouvelle serie. Bucureşti.
Danubius	Danubius – Revista Muzeului de Istorie Galati. Galaţi.
DDME	A Debreceni Déri Múzeum Évkönyve. Debrecen.
DolgCluj	Dolgozatok az Erdélyi Nemzeti Érem- és Régiségtárából, Klozsvár (Cluj).
DolgSzeg	Dolgozatok. Arbeiten des Archäologischen Instituts der Universität. Szeged.
EphNap	Ephemeris Napocensis. Cluj-Napoca.
FADDP/GMADP	Führer zu archäologischen Denkmälern in Dacia Porolissensis/Ghid al monumentelor arheologice din Dacia Porolissensis.
FolArch	Folia Archaeologica. Budapest.
Forsch. u. Ber. z. Vor- u. Frühgesch. BW	Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg.
GPSKV	Gradja za proučavanje spomenika kulture Vojvodine. Novi Sad.
GSAD	Glasnik Srpskog Arheološkog Društva. Beograd.
HOMÉ	A Herman Ottó Múzeum Évkönyve. Miskolc.
JAMÉ	A nyíregyházi Jósa András Múzeum Évkönyve. Nyíregyháza.
JahrbuchRGZM	Jahrbuch des RömischGermanischen Zentralmuseums Mainz.
Lohanul	Lohanul. Revistă cultutal ştiinţifică. Huşi.
MCA	Materiale şi Cercetări Arheologice. Bucureşti.
MCA-S.N.	Materiale şi Cercetări Arheologice-Serie Nouă. Bucureşti.
MA	Memoria Antiqvitatis. Complexul Muzeal Judeţean Neamţ. Piatra Neamţ.
MFMÉ	A Móra Ferenc Múz. Évkönyve. Szeged.
MFMÉ StudArch	A Móra Ferenc Múzeum Évkönyve, Studia Archaelogica. Szeged.
MN	Muzeul Naţional. Bucureşti.
Opuscula Hungarica	Opuscula Hungarica. Budapest.
PamArch	*Památky Archeologické. Praha.*
Past and Present	*Past and Present. Oxford.*
PIKS/PISC	Die Publikationen des Institutes für klassische Studien/ Publicaţiile Institutului de studii clasice. Cluj-Napoca.
PBF	Praehistorische Bronzefunde. Berlin.
PZ	Prähistorische Zeitschrift. Berlin.
Rev. Muz.	Revista Muzeelor, Bucureşti.
RIR	Revista Istorică Română.
RMM-MIA	Revista Muzeelor şi Monumentelor. seria Monumente istorice şi de artă. Bucureşti.
RMMN	Revista Muzeului Militar Naţional. Bucureşti.
Ruralia	Ruralia. Památky Archeologické – Supplementum. Praha.
RVM	Rad Vojvodjanskih Muzeja, Novi Sad.
SCIV(A)	Studii şi Cercetări de Istorie Veche. Bucureşti.

SCN	Studii şi Cercetări Numismatice. Bucureşti.
SlovArch	Slovenská Archeológia. Nitra.
SIA	Studii de Istoria Artei. Cluj Napoca.
SIB	Studii de istorie a Banatului. Timişoara.
SKMÉ	A Szántó Kovács János Múzeum Évkönyve, Orosháza.
SMIM	Studii şi Materiale de Istorie Medie. Bucureşti.
SMMA	Szolnok Megyei Múzeumi Adattár. Szolnok.
SMMIM	Studii şi Materiale de Muzeografie şi Istorie Militară. Bucureşti.
Starinar	Starinar. Arheološki Institut. Beograd.
StCl	Studii Clasice, Bucureşti.
StComBrukenthal	*Studii şi comunicări*. Sibiu.
StudArch	Studia Archaeologica. *Budapest*.
StudCom	Studia Comitatensia. *Szentendre*.
StudUnivCib	Studia Universitatis Cibiniensis. Sibiu.
StudCom – Vrancea	Studii și Comunicări. Muzeul Județean de Istorie și Etnografie Vrancea. Focșani.
StudŽvest	Študijne Zvesti Arheologického Ústavu Slovenskej Akademie Vied. Nitra.
Symp. Thrac.	Symposia Thracologica. Bucureşti.
Tempora Obscura	Tempora Obscura. Békéscsaba 2012.
Tibiscus	Tibiscus. Timişoara.
VAH	Varia Archaeologica Hungarica. *Budapest*.
Ziridava	Ziridava. Arad.
ZSA	Ziridava Studia Archaeologica. Arad.