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VII

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The Carpathian Basin and its Role in the Neolithisation of the Balkan Peninsula

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Contact adress: „Lucian Blaga" University of Sibiu, Faculty of History and Patrimony, *Institute for the Study and Valorification of the Transylvanian Patrimony in European context*, B-dul Victoriei Nr. 5-7, 550024 Sibiu, România; tel. / fax. 0269 / 214468; 0745 / 366606; e-mail: sabinadrian.luca@ulbsibiu.ro, ins.arheologie@ulbsibiu.ro; web: http://arheologie.ulbsibiu.ro.

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THE COMPARATIVE ANALYSE OF FAUNAL SAMPLES FROM SITES DATED IN STARČEVO-KÖRÖS-CRIŞ CULTURE – PHASES IB-IIA FROM TRANSYLVANIA AND BANAT

Georgeta EL SUSI
getasusi@yahoo.com

Key words: *Neolithic, faunal samples, Transylvania and Banat, Romania.*
Abstract: *In our regions the first Neolithic communities introduced a husbandry supported by caprovines, containing also, cattle, pig and dog. Having in view the new environmental conditions favorably to bovine breeding, over time a switch over towards cattle exploitation could happened. Positively, towards the end of the final phases of the Starčevo-Criş culture the prevalence of cattle in husbandry becomes certitude.*

The archaeological researches retaken or started in sites integrated to the earliest Neolithic phases in the Banat Plain and south-west Transylvania allowed the sampling of new faunal materials in the last decade; the analyses of the most recent records concerning the animal exploitation in settlements dated in *Starčevo-Körös-Criş Culture (phases* IB-IIA) (Lazarovici, Lazarovici, 2007, cited for dating of sites) in addition to older data is the goal of our article. The hypotheses have a provisional character both the excavations carry on in many sites and the samples, sometimes not quite numerous, partially cover the envisaged territory.

Overall we talk about 11,886 animal bones produced by seven sites, three of them being located in the Banat and four ones in Transylvania. The quantitative evaluation puts forward particularly the sample from Foeni-*Gaz* including 7,561 remains. Samples of 1,000-1,200 fragments have been collected by now at Miercurea Sibiului-*Petriş* and Şeusa-*Cărarea Morii,* the other sites producing less than 700 bones. The samples collected from the mentioned settlements count much more remains, but just the mention amounts exemplify the *Starčevo-Körös-Criş* IB-IIA fauna.

As with the spatial scattering, Foeni-*Gaz* (Ciubotaru, 2004 (researcher of the site); El Susi, 2001, p. 15-18) and Foeni-*Sălaş* (Greenfield, Draşovean, 1994, p. 45-86) are located on natural mounds in the Timiş plain, that includes the floodplain of the Timiş, Bega, Moravița and Bârzava rivers, with altitudes of 80-90 m that gradually decline towards the NE. The hydromorphic soils, besides the very high water table caused frequent flooding and seasonal formation of swamps in the area. The environment was wet and swampy until recent times (Oprea, 1965, p. 252-253). The zone is deforested excepting some spots of woodland originating in modern times. Dudeştii Vechi (El Susi, 2001, p. 18-24) is located in the north-western corner of the Banat, in a low area also. Pojejena-*Nucet* (El Susi, 1991, p. 20-24) lays

on the lowest terrace of the Danube (flooded at present), in a small depression, a region with a highest bio-geographical potential.

Table 1. The species frequencies (as fragments) in Neolithic sites from Transylvania and Banat.

Taxon	Dudeştii Vechi	Foeni-*Gaz*	Pojejena-*Nucet*	Şeusa-*Cărarea Morii*	Miercurea Sibiului-*Petriş*	Cauce-Cave	Gura Baciului IB-IIA level
Bos taurus	22.9	34.4	43.3	30.8	55.5	3.5	40.1
Ovis / Capra	25.7	40.4	7.1	57.1	28.9	75	37.1
Sus domesticus	5	5.1	0.9	7.1	1.3	11.9	1.8
Canis familiaris	1.7	0.3		0.2	0.1		
Cervus elaphus	23.5	7.3	28.1	1.4	5.2	3.8	11.3
Capreolus c.	2	4.1	1.9	3	2.3	2.1	4.1
Sus scrofa	12	2.7	10.9		0.6	1.1	1.8
Bos primigenius	6.4	4.9	3.8	0.2	6		3.8
Lepus europaeus					0.1	2.1	
Ursus arctos	0.3					0.5	
Castor fiber	0.5	0.1	0.5				
Vulpes vulpes		0.2					
Meles meles			2.4				
Martes martes		0.1					
Felis silvestris		0.1					
Lynx lynx			0.5				
Equus ssp.			0,5				
Domestics	**55.3**	**80.2**	**51.3**	**95.2**	**85.8**	**90.4**	**79**
Wilds	**44.7**	**19.7**	**48.6**	**4.7**	**14.2**	**9.6**	**21**
Total sample	**515**	**7,561**	**302**	**1,086**	**1,243**	**727**	**452**

The settlements from Transylvania developed in areas favorable to living and adequate, both as geo-morphological position or their potential of resources, for the essential needs of the animal farming. All the sites are positioned on river terraces, in uplands, at the junction between plains and plateaus or eves piedmont regions (Ciută, 2005, p. 192). So the Cauce cave (Luca et allii, 2005, p. 95-155) is located in the western part of the Poiana Ruscăi Mountains, on the right side of the rivulet Runcu valley at 1.5 km farthest from Cerişor village. The gentle local climate due to Mediterranean influences and a diversified flora and fauna favored a long habitation of the cave during prehistory and history times. Gura Baciului is located in a

piedmont zone, in the north-east of Gilău Mountains, on a terrace oriented SSE, nearby the Suceag rivulet. The area is isolated, defended against winds and little accessible. Miercurea Sibiului is placed in a depression lying between the piedmont of Cindrel-Şureanu Mountains and Secaşelor Plateau, on a terrace of Secaşul Mare rivulet. As well, on a high terrace of a left sideways stream of Mureş river is located the Şeuşa site (detailed information about bio-geographical location of these and other Neolithic sites from Transylvania in Ciută, 2005, p. 44-54). It seems that the older phases (circa 500 years) of the *Starčevo-Körös-Criş* Culture developed in the specific climate of the Boreal (Cârciumaru, 1996, p. 18) meanwhile the oak and hazelnut forests already covered the plateau regions and the pine and spruce fir woods reached the hilly regions. That time the climate was drier and a little colder (Cârciumaru, 1996, p. 132).

THE SPECIES FREQUENCIES IN SITES

Although the forenamed samples are unequally as number of fragments and originate in sites scattered on a vast territory, we tried to stress common / or uncommon patterns, several criteria being used: bio-geographical placement, rapports between taxoni, domestic / wild ratio, age-class distribution. So, we note that domestic mammal segment prevails in almost samples according domestic: wild ratio. The wild mammal segment has different percents, many times the environment determining a special behavior concerning species. Sometime the rule does not match. Few sites emphasize a reduced percent of the game (below 5 %), the domestic segment almost totally covering the food supplying of the communities; is the case of Cauce (9.6 %) and Şeuşa (4.7 % wild mammals) sites.

In the other extreme place are positioned the settlements with an increased game rate, 40 % beyond, e.g. Dudeştii Vechi (domestic / wild ratio – 55.3 / 44.7 %) and Pojejena-*Nucet* (51.3 / 48.6 %). If the former site is placed in the lower plain of the Banat, the second one is the Danube Valley, both of them in different locations without links each other. Maybe both areas offered a mixture of specific resources in the VIth mil. BC. Environments discrepancies (well sketched at present) maybe were attenuated in the past, displayed both by the different rate of the taxoni or the variety of game. Such as red deer is quoted with high percentages both in the Banat Plain or the Danube Valley (23 % at Dudeştii Vechi and 28.1 % at Pojejena-*Nucet*). Similar percents show the wild swine (12-11 %) and roe deer (2 %) in both locations. By contrary the aurochs reached a reduced frequency at Pojejena-*Nucet* (2.2 %) and a higher one in the Banat Plain (6.4 % at Dudeştii Vechi). An intermediate category includes sites (the others) with an important but variable hunting rate (10-30 %), never dominant. They are placed in a large range of biotopes: low region – Foeni-*Gaz* (19.7 %); sub-mountainous region – Gura Baciului (21 %) or plateau – Miercurea Sibiului (14.2 %). Thereupon, an evaluation of domestic/ wild rapport in accordance with the geographic situation displays sometimes contradictory data even for sites with similar locations. We mention again those settlements as Foeni-*Gaz* and Foeni-*Sălaş* (Greenfield, Draşovean, p. 73) characterized by a hunting rate no more than 20 % as compare to Dudeştii Vechi with an increased rate of the game, up to 42-44 % (also in the upper layer

belonging to a later phase of the Starčevo-Criş culture the same increases hunting rate was found, sample unpublished). In the light of these preliminary data we suppose that the natural resources offered by environment were evaluated and integrated in the communities' economies in different ways. Also unequal samples could produce these variations.

Table 2. Species frequencies (as frgm.) at Gura Baciului.

	pit house 2a	pit house 1	pit house 8	pit house 10	pit 2a	pit 18 b	pit house 20	pit house 23	Total	
St. Criş / phase	I A	1A-I B	I C-IIA	I C-IIA	I C-IIA	I C-IIA	II A	II A	Frgm.	%
Bos taurus	10	53	25	18	3	4	3	11	127	38.3
Ovis / Capra	4	31	37	18	2	1	16	11	120	36.1
Sus domesticus	2	1	3	3					9	2.7
Domestics	16	85	65	39	5	5	19	22	256	77.1
Cervus elaphus	2	11	13	14	2		3	3	48	14.5
Capreolus c.		8	3	2				1	14	4.2
Sus ferrus		2		1			1		4	1.2
Bos primigenius		7	1	1				1	10	3
Wilds	2	28	17	18	2		4	5	76	22.9
Sp. determined	18	113	82	57	7	5	23	27	332	100
Bos / Cervus	3	11	5	4	1		2		26	
Ovis / Capreolus	1	2		1					4	
Unio sp.				2					2	
Splinters	5	4	1	28					38	
Total sample	27	130	88	92	8	5	25	27	402	

In case of Transylvanian sites, in almost all cases the hunting percent doesn't exceed 20 %, even if the sites developed in uplands, exemplifying 21 % is rate at Gura Baciului, the placement in a sub-mountainous region influenced the faunal composition in a lesser measure. Again an exception is Cauce, a site located in a mountainous milieu that produced just 9.6 % wild mammals remains; certainly the cave habitation conditions determined a special type of archaeological accumulation; that one contained mostly bones of small size (small bodied animals as pig, caprinae) originating in juvenile animals (El Susi, 2005, p. 96-101), the

bones of large bodied animals were simply one left in another place. In this manner we tried to explain the peculiar accumulation of bones in that site. A lower hunting rate (14.2 %) was estimated at Miercurea Sibiului, site placed in a lower zone.

Domestic mammals

Talking about the main species frequencies exploited for the duration of sites function interesting results were obtained. **Cattle** remains clearly dominate the samples from Pojejena-*Nucet* (Danube Valley) – 43 %; at Foeni-*Sălaş* is noted with 52 % (Greenfield, Draşovean, p. 78), by contrary at Dudeştii Vechi and Foeni-*Gaz* they total no more than 33-34 % (Table 1). In Transylvanian sites, clearly prevail at Miercurea Sibiului with 55.5 %. An ambiguous situation was found at Gura Baciului; so at a first sight the cattle percent as fragments is about 40.1 %, the small ruminants ranking the second with a closed value – 37.1 % (Tables 2-3). As individuals the situation reverses, the caprinae dominate by 33 %, followed by cattle with

Table 3. Species frequencies (as individuals) at Gura Baciului.

	pit house 2a	pit house 1	pit house 8	pit house 10	pit house 2a	Pit 18 b	pit house 20	pit house 23	Total	
St. Criş / phases	I A	1A-I B	I C-IIA	I C-IIA	I C-IIA	I C-IIA	II A	II A	MNI	%
Bos Taurus	2	11	5	4	1	2	2	3	30	32
Ovis / Capra	2	7	6	6	1	1	5	3	31	33
Sus domesticus	1	1	2	1					5	5.3
Domestics									66	70.3
Cervus elaphus	2	4	2	2	1		2	1	14	14.9
Capreolus c.		3	2	1				1	7	7.4
Sus ferrus		1	1	1			1		4	4.2
Bos primigenius		1		1				1	3	3.2
Wilds									28	29.7
Total individuals									94	100

32 %.The situation is rather the effect of taphonomic conditions in stratum, the cattle and sheep bones preserving in different ways. Thereto, the sheep bones originating mostly in young and sub-adult individuals many pieces destroyed; the accentuated splitting of the bones (a characteristic of this sample) generated a large amount of "undetermined sample". So many bias factors were implied. By contrast, cattle bones better preserved, increasing the chance to determine much more, even if most of them suggested juvenile exemplars. Barely numerous samples can clarify

this question. Returning to cattle dominance, the lowest percent 3.5 % is recorded at Cauce, maybe the milieu disagreed with bovine rising.

The sheep/goats to some extent dominate both at Foeni-*Gaz* (40.4 % versus 34.4 % cattle value) and Dudeştii Vechi (25.7 % versus 22.9 % cattle value); with 25 % are quoted at Foeni-*Sălaş.* Significant high values reach at Cauce (75 %) and Şeuşa-*La cărarea morii* (57.1 %). At Miercurea Sibiului they rank the second with 28.9 %, an increased value even if cattle dominate the statistics. **The pig** exploitation is reduced in almost all sites, as a characteristic of the oldest phases of the Neolithic in our regions. Their rate falls below 7 %, despite the geographical location. With 11.9 % is noted at Cauce, the value suggesting propitious conditions of living in the forested area of the site. **The dog** had a minor role in the communities' life as the reduced frequencies (below 1 %) show. As for the dog meat consumption the date are ambiguously. Few complete bones preserved, most part of them was broken, being collected from waste pits; cut marks were not recognized on long bones. In exchange, at Dudeştii Vechi (personal data, unpublished yet) were identified some braincases broken in the frontal-parietal region for extracting the brain, perhaps.

Wild mammals

The outcomes of faunal analyses show the disparate importance of the hunting in the communities' life. An oversight on domestic/wild ratio in each settlement previously was done. The samples structure emphasized the diversity of the wild fauna regardless of site location. Among wild mammals the most exploited grouping is that of artiodactyls including the red and roe deer, aurochs, wild swine; they represented the main meat source and raw materials, antlers, bones, skin. The group regularly appears in each assemblage no matter its size. The most hunted mammal is the **red deer**, even if its percent fluctuates from sample to sample. As the fauna information shows it was the most common element of the wild fauna, with increased density throughout prehistory, largely spread both in low and uplands. By and large in the lowland sites of the Banat it reaches variable percents: 23.5 % at Dudeştii Vechi and 7.3 % at Foeni-*Gaz*. The most increased value – 28.1 % is normally attained at Pojejena-*Nucet.* In Transylvania*,* merely at Gura Baciului totals 11.3 %, in the other sites below 5 %. To some extent its values might suggest the different forestation rate around settlements. From this point of view, it seems that the Banat plain had forested parts akin to Danube Valley. Contrasting, the surroundings of Miercurea Sibiului site were covered by semi-arid vegetation with few spots of forest, especially in the oldest habitation phase. In this context the aurochs rate - 6 % go beyond the red deer value (5.2 %). Gura Baciului being placed in a sub-mountainous region records a higher value of the red deer – 11 %, the roe deer and aurochs reaching up to 4 %. At Cauce the red deer was of little amount in the community diet judging by it percent - 3.8 %. **The wild swine** records up to 12 % in the Banat and below 2 % in the others. The reach water table from that region associated with typical vegetation favored a large population.

Usually the **roe deer** percent lowly fluctuates, between 2-4 %, in most cases a correlation with the red deer percent being established.

A second grouping of hunted mammals includes the **brown bear** and **hare**, important meat and fur sources, both species being accidentally captured. The former species reaches below 1 %, being identified at Dudeştii Vechi and Gura Baciului. Its incidence at Gura Baciului is justified by the site placement, astonishing in exchange, its occurrence at Dudeştii Vechi, site located farthest of the Banat uplands. As repeatedly mentioned it was pretty frequent both in up and lowlands during prehistory. The **hare** reaches below 2 % everywhere, its bones missing at Foeni, Şeuşa.

Of little amount the group of small and big carnivorous, rodents completes the listing of hunted mammals. Accidentally hunted, for fur and to reduce their predator action, they had a minor economic role. Were included in this category: **beaver** (identified just now at Dudeştii Vechi, Foeni-*Gaz*, Pojejena-*Nucet*), **fox** (Foeni-*Gaz*), **badger** (Pojejena-*Nucet*). Bones of **bobcat** and **wild horse** (?) (El Susi, 1991, p. 22) were found at Pojejena-*Nucet***.** As with **marten** it was identified just in sites from the Banat.

Table 4. The frequencies of animal classes.

	Pojejena-*Nucet*	D. Vechi-niv I	Foeni-*Gaz*	Şeuşa	M. Sibiului	Gura Baciului I	Cauce
Mammals	93.7	86.8	12.7	98.1	99.8	99.7	99.9
Birds		1			0.2		
Reptiles		0.4					
Fish	3.6	2.5		0.1			
Mollusks	2.7	9.3	87.3	1.8		0.3	0.1

Birds Few remains of birds were preserved in our samples; according to faunal data, the capture of birds was occasionally, sporadically and to some extent practiced, aside fishing and gathering. Bird remains were identified just at Dudeştii Vechi and Miercurea Sibiului.

Fishing and mollusks gathering Neither these activities are satisfactory reflected by faunal samples, though the sites were founded in the vicinity of aquatic sources. In case of fish samples neither its bones not preserved, nor the traditional hand-collecting method biased the sample size. By chance some fish vertebrae or other visible bones at collecting were determined. Fish bones were identified at Dudeştii Vechi, Pojejena and Şeuşa only. By the side of fishing, other seasonally activities would had practices as tortoise capture (mostly at Dudeştii Vechi). The mollusks gathering is characteristic mainly to community at Foeni-Gaz, 87.3 % is the percent of the shells (Unio ssp.). A similar case is Foeni-Sălaş, where six species of snail were determined, 99 % of them came from the common snail (Helix sp.). It is specified also, that the snails as a good source of carbohydrates could replace for grains (Greenfield, Draşovean, 1994, p. 74). In Transylvanian sites the rate of these remains is minor.

AGING DATA

Cattle Analyzing the age-class profiles in each case seemingly results were got. As a dominant trend is the increased quota of young and sub-adults animals in almost all sites. At Cauce and Şeuşa this class records up to 80 %. In most cases the animals killed aging less 2-3 years total 40-60 %. Just at Foeni-*Gaz*, the percent of sub-adults is 33 %. The adult quota varies between 20-57 % (Table 5). The percent of animals kept to an advanced stage (reproduction, milk) fluctuates as it follows: 9-15 % in the Banat Plain, 20-35 % at Gura Baciului and 26.7 % at Miercurea Sibiului. At Pojejena, Cauce and Şeuşa mature individuals were not identified. Thereupon, cattle were bred chiefly for meat, 50 % of the total protein necessary was provided by bovines. Certainly the existence of some individuals exploited many years after they reached maturity would imply the milk using in consumption. Concerning the sex ratio, at Miercurea Sibiului the male/female ratio is 11/6, suggesting a preference for male killing, mostly before or sooner after their body maturity accomplished. Obviously economic judgment conditioned the culling of males for killing, keeping the females for by-products.

Table 5. Cattle kill-off patterns.

Site	Infans	juvenile	sub-adult	Adult	mature
Foeni-*Gaz*		14.2	19	57.1	9.5
Dudeştii Vechi		7.7	30.8	46.1	15.3
Pojejena-*Nucet*	22.3		44.4	33.3	
Miercurea Sibiului	5.4	17.9	25	25	26.7
Cauce	20	40	20	20	
Şeuşa	20	40	20	20	
Gura Baciului I	40		40		20

Caprinae A similar scheme to that of cattle was obtained in case of small ruminants. So the young and sub-adult exemplars dominate the statistics with 60-75 % in almost all sites, excepting Gura Baciului with 57.6 %. Perhaps in this case, an economy focused on small ruminant implied a cautiously exploitation of species. Overall the quota of adult and mature animals varies as it follows: 21-37 % adults and 11-14 % matures in the Banat Plain sites. Mature individuals were not presumed at Pojejena-*Nucet*. The percent of adults is 19.6 % at Miercurea Sibiului; few exemplars lived to old age, 8 %. The most increased value of matures was found at Gura Baciului, 30.7 %. At Şeuşa were not identified mature exemplars, in exchange their number is reduced at Cauce.

Suids were kept for meat, but their importance in diet is reduced as compare to the later epochs. The kill-off patterns indicate a value of 50-90 % young and sub-adult exemplars. Also adult animals were identified everywhere excepting the Cauce sample. Their percent vary between 50 % (Şeuşa, Dudeştii Vechi) and 16.7 % (Gura Baciului).

Table 6. Sheep-goat kill-off patterns.

Site	Infans	juvenile	sub-adult	adult	mature
Foeni-*Gaz*		35.5	28.9	21.4	14.2
Dudeştii Vechi		18.6	33.3	37	11.1
Pojejena-*Nucet*	25		50	25	
Miercurea Sibiului	23.9	19.6	28.3	19.6	8.6
Cauce	28.9	26.7	11.1	33.3	
Şeuşa	17.6	23.5	29.4	29.4	
Gura Baciului I	30.7		26.9	11.5	30.7

Table 7. Pig kill-off patterns.

Site	Infans	juvenile	sub-adult	adult/mature
Foeni-*Gaz*		50	16.7	33,3
Dudeştii Vechi		16.7	33,3	50
Miercurea Sibiului	25		50	25
Cauce	50	10	30	
Şeuşa	25	25		50
Gura Baciului		83.3		16.7

Conclusions

Closing, the earliest Neolithic communities from the Banat Plain exploited in different ways the natural resources offered by surroundings (fish, mollusks, birds, reptiles, wild mammals), without doubt a seasonally exploitation of these resources is supposed. Accordingly, the oldest habitation from Dudeştii Vechi characterizes by a sustained hunting, by the side of a seasonal exploitation of aquatic resources. Of domestic species segment, a special attention was done to small ruminants, cattle ranking the second in diet. The pig exploitation was insignificantly. An economy focused on caprinae and aquatic products (totaling 87 %) characterizes the Foeni-Gaz community. The hunting played a minor role in supplying. The same increased role of aquatic resources is noted at Foeni-Sălaş too, but cattle are dominant among domestics (Greenfield, Draşovean, 1994, p. 74). Thus, the cited sites, with the exception of Foeni-Sălaş, developed animal economies sustained principally by caprinae; for all that cattle reached important values (20-30 %), as compare to sites from Macedonia, Thessaly. Certainly the climate was propitiously to cattle living. The environment from Danube Valley would have been more propitious to cattle and hunting than to small ruminant exploitation. In this context could be explained the high rate of cattle and wild mammals at Pojejena-*Nucet*. With regard to sites from Transylvania, two types of animal husbandry were emphasized. Some sites display a clear dominance of caprinae such as Şeuşa, Cauce, Gura Baciului (the last

site distinguishes by an increased ratio of cattle). An economy sustained by cattle (over 50 % dominance) is noted at Miercurea Sibiului, only.

In our regions the first Neolithic communities introduced a husbandry supported by caprovines, containing also, cattle, pig and dog. "The comparatively high cattle and low pig ratio distinguishes the animal husbandry from that of the early Neolithic of the Southern Balkans and put it into the northern type" (Bökönyi, 1992b, p. 79), typical to our regions. Having in view the new environmental conditions favorably to bovine breeding, over time a switch over towards cattle exploitation could happened. Positively, towards the end of the final phases of the Starčevo-Criş culture the prevalence of cattle in husbandry becomes certitude.

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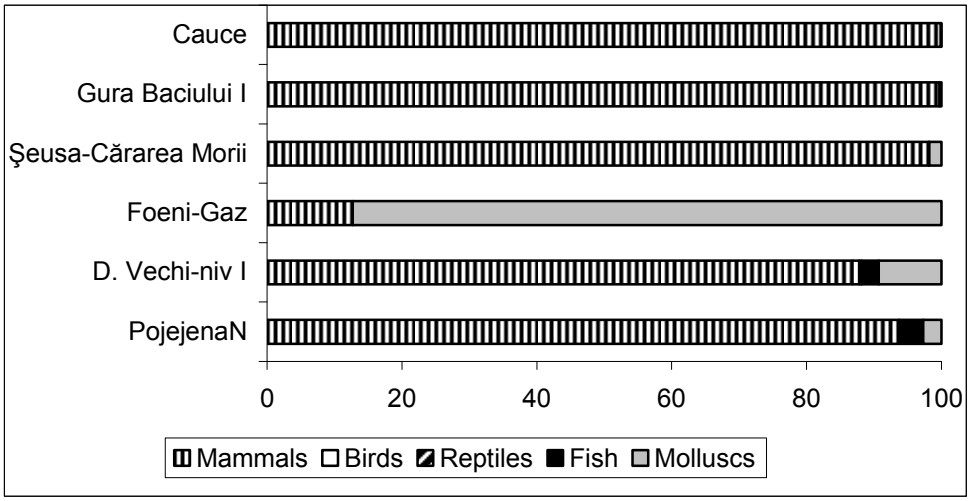

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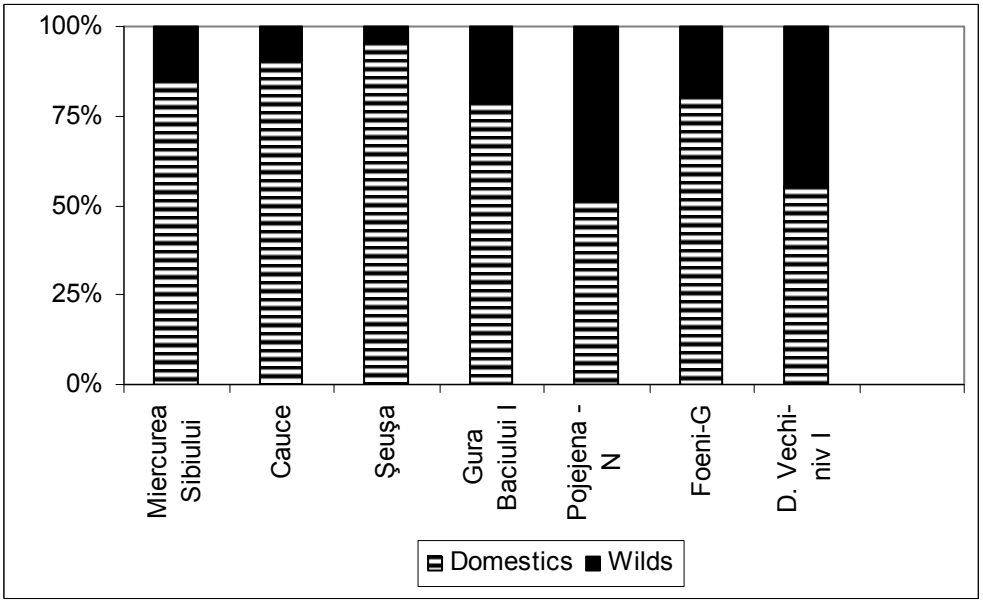

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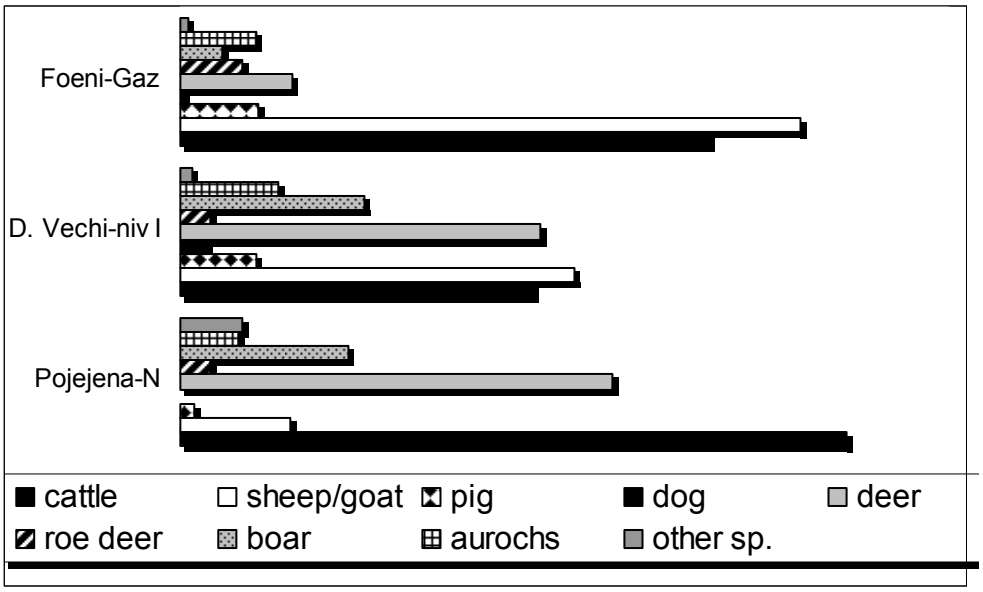

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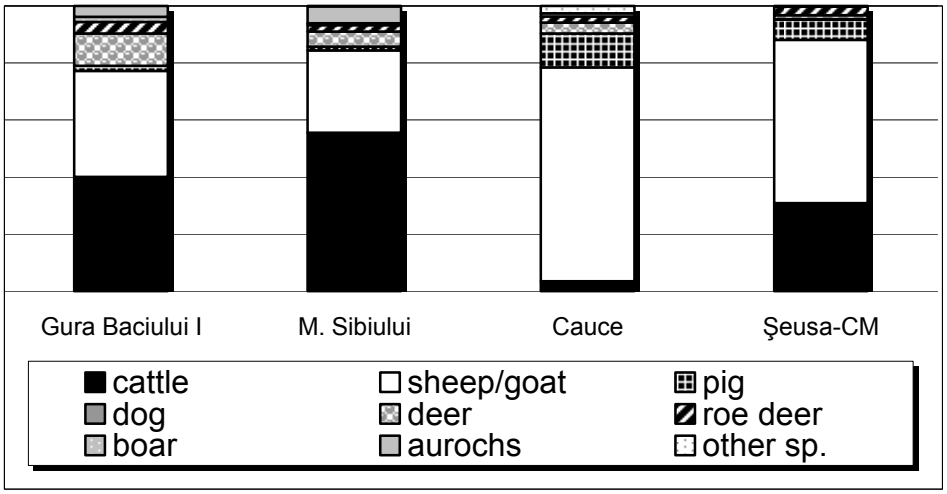

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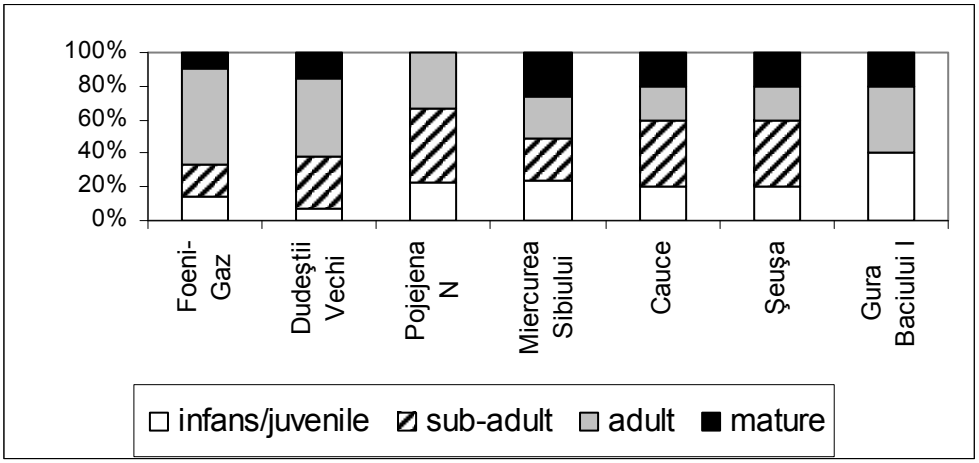

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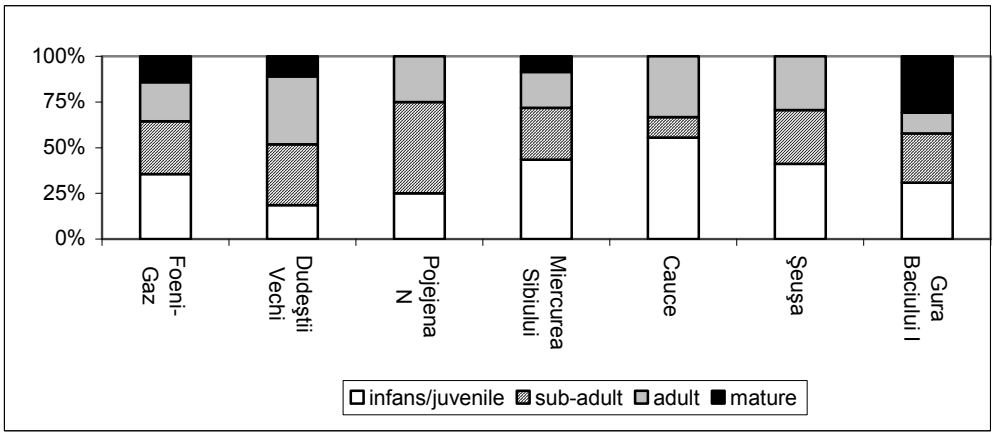

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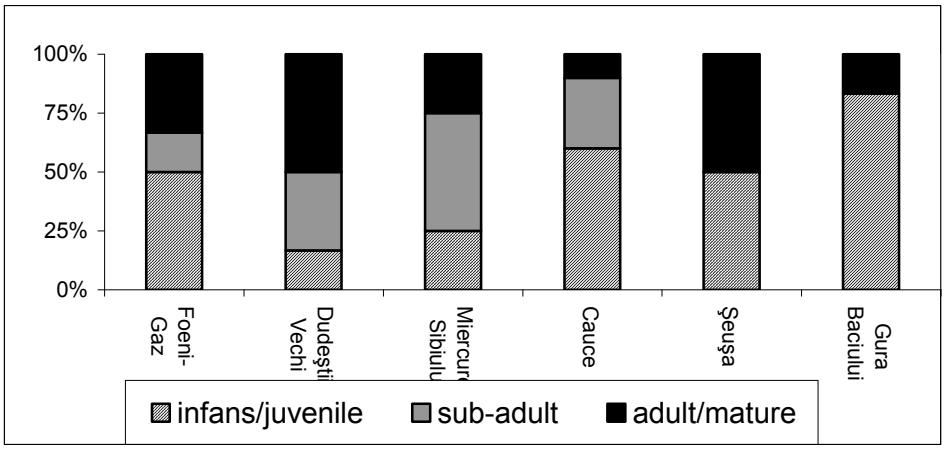

Fig. 7.