
Hunting Evidence from Eneolithic Site of Getahovit-2 Cave; Armenia

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Abstract: Wildlife in Armenia was always varied due to the different geographic landscapes and biotopes, between the valleys, mountains, forests, and plateaus of the country. A wide range of large mammals inhabited the Southern Caucasus. In Armenia, animal habitat varied through time, both during the Pleistocene and the Holocene and hunting activities were the focus of Paleolithic meat-based subsistence. In 2018, the Institute of Archaeology and Ethnography NAS RA carried out the excavations, with the financial support of Ijevan Wine-Brandy Factory 2. Two Chalcolithic period layers were excavated mainly that presented the early phase and which were separated from the previous occupations of the same period by the thick layer of sterile and the muddy sediment full of small stones. During the Chalcolithic period, the groups practicing the transhumance, hunting and gathering seasonally had occupied the cave. Considerable numbers of osteological material imply the existence of hunting and gathering activity around the cave. The present study examines the wild animal remains in addition; backed points, blades and some fragments also exhibit evidence for hunting activities. Those that could be identified to species appear to be *Sus scrofa*, *Vulpes vulpes* and mainly *Capreolus capreolus*. The fracture analysis confirms that the occupation of this small cave was closely related mainly to the hunting activity.

Keywords: Archaeozoology, Armenia, Eneolithic Age, Getahovit-2 Cave, Hunting

1. Introduction

It has long been known that pathways to food production in Armenia are complex and varied. In the Eneolithic period of Armenia, the adoption of domestication and the existence of pastoralism became an established and widespread way of life [1]. Here, it seems likely that the development of subsistence strategies would have been heavily shaped by the unstable, often marginal environments that north Armenia hunter-gatherers lived in. Armenian hunter-gatherers and food producers (pastoralists, agriculturists-farmers) used to co-exist. It is likely that spatial variation in climatic and environmental conditions, together with the availability of food resources, dictated whether managing livestock or hunting or combinations thereof, took place.

2. Materials and Methods

2.1. Getahovit-2 Cave

Getahovit-2 small cave is placed (located) at the valley (N 40°54'38.5", E 045°05'59.7") formed by Khachaghbyur river (the tributary of Aghstev) on the elevation of ca 968 m a. s. l., in between modern villages Yenokavan and Getahovit. It is one among the numerous caves located on the terraces and vertical, sheer cliffs of the canyon (Figures 1& 2).

The cave consists of two halls: the first one, opened to the south, covers an area of 64 m² and the second (small one), that can be accessed through a narrow passageway.

Excavations of 2011 - 2017 at Getahovit cave conducted by the Armenian-French joint project «Mission Caucasus» and in 2018 the Institute of Archaeology and Ethnography NAS RA held the works here with the financial support of

Ijevan Wine-Brandy Factory [2].

The archaeological investigations of the site yielded nearly 2 m deep cultural deposits with the quiet serious, few medieval period horizons (11-13th cent. AD), separated by the sterile from the level of Chalcolithic period. Finally, with the help of the deep test sounding the horizon of the Upper Paleolithic period (22020-21685 Cal BC) was uncovered in the cave, covered with thick geological sediments.

Based on radiocarbon dates the Chalcolithic period attested in Getahovit-2 cave placed very well in the middle sequence of the chronological chart. More, the dates from the 2014 excavations showed the very early Chalcolithic period presence (5289-4995 Cal BC).

2.2. 2018 Excavations

The excavations done during 2018 can be described as follow (Table 1).

After the removing the sterile layer, the mud layer appeared with the very light and short visit traces, that were represented by the few simple fireplaces and few finds. The C 14 dates gave the data 4542-4371 Cal BC.

The second excavated layer (Level 3, horizon 7, US 53, 54, 56) was the main investigated horizon represented the activity layer with the fireplaces, the finds of bone, obsidian pieces and pottery shards The C 14 dates gave the data 4703-4545 Cal BC.

And the third horizon (Level 3, horizon 8, US 57, 58, 15) was also the activity layer that is not excavated yet, but presented by the big, serious fireplaces. It must be correlated with the 2014 US 14 with the earlier dates (5289-4995 Cal BC).

a. Sterile- LEVEL 3, Middle Phase horizon 6 (US 48,

Mud layer – US 49, 52)

b. Chalcolithic - LEVEL 3 – Early Phase- horizon 7 (activity layer –US –west 51, 53, east 54, 55, the base US 56).

c. Chalcolithic– LEVEL 3 – Early Phase- horizon 8 (activity layer –US 58-west, US 57 east and the base-US 15).

Two activity Chalcolithic period horizons were attested which were separated from the previous occupations by the thick layer of the sterile layer, plus muddy sediment layer full of small stones (Figures 3-4). The layer with the traces of Chalcolithic occupation (US 50, 51- west and US 53, 54 - east), that excavated completely during the season was preserved under the nearly 10 cm thick layer of the muddy sedimentation that entered the cave from the southeastern part. In general, the layer was presented only by fireplaces differ from each other by the way of structuring and usage intensity.

And finally, the last activity layer of Chalcolithic period that has been opened during the season was US 57 at the eastern half with the quite large fireplaces (Structures 212, 215, 216) and US 58 at the western. This layer more likely represents the Early Chalcolithic occupation and not excavated yet. According to data from 2014 (5289-4995 Cal BC) and also the observations had done during the last excavations this activity layer is the last rested on the natural (Geological), sterile layers and it is the first trace of the Chalcolithic period men entered the cave and used it as a temporary home. The future excavations hopefully will uncover the particularities of this unique layer of the earliest Chalcolithic in the cave Getahovit-2.



Figure 1. Getahovit-2 cave location in Armenia.



Figure 2. Getahovit-2 cave surrounding nature.

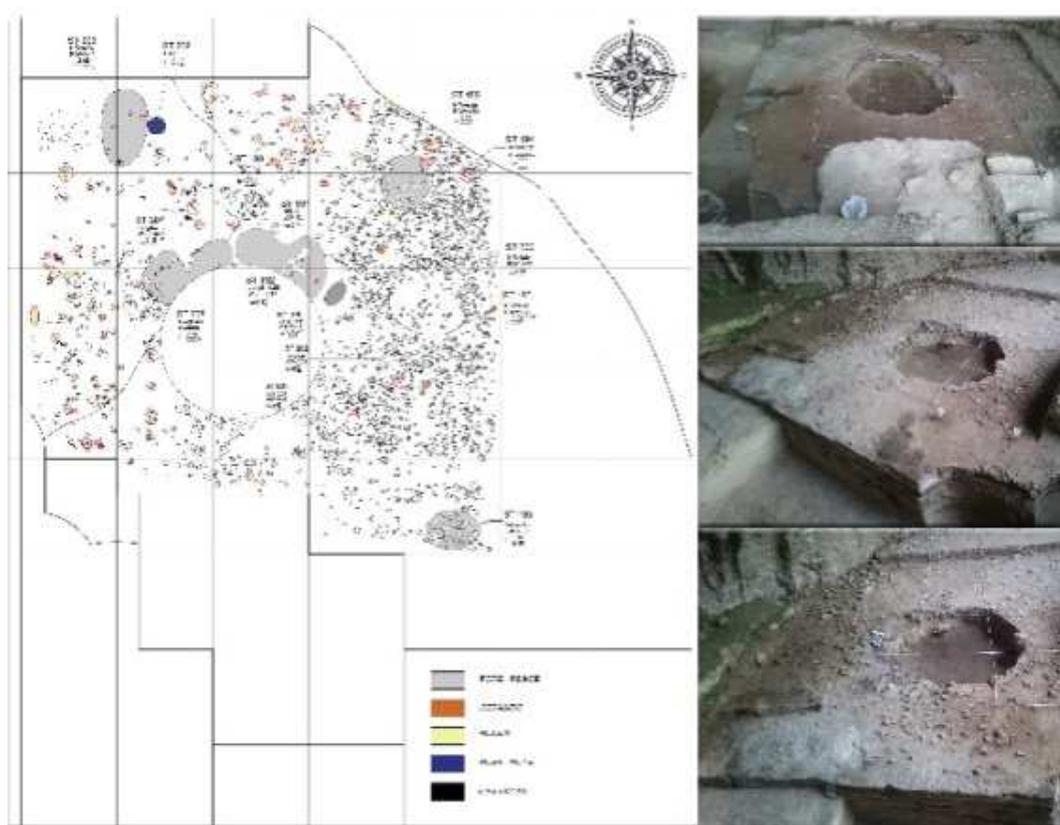


Figure 3. Plan of the Chalcolithic horizon 7.



Figure 4. Getahovit-2 St 186.

3. Results

The rich faunal assemblage recovered from the new excavations at Getahovit-2 Cave provides one avenue for exploring the nature of Eneolithic adaptations in Armenian regions just prior to the emergence of agricultural economies. Here we report on the initial results of the analysis of the faunal remains containing a large number of wild animal remains.

Table 1. Getahovit -2 cave layers and dates.

Code Lab.	Year	Sq.	Level	Mat.	Date BP	Date AD (95%)	Period
ILTL12043A	2011	C7	dec. 3	Charcoal	933 ± 45	1021-1206 AD	
Lyon-10370 (SacA-34117)	2012	D7	niv.3, F10, near the skull	Charcoal	1060 ± 30	897-1024 AD	Middle-Ages
Lyon-13486 (SacA-47796)	2015	G3	str.81 (child tomb)	Charcoal	980 ± 30	993-1155 AD Date cal BC (95%)	
BETA-306022	2011	C7	dec. 5	Charcoal	5490 ± 30	4445-4262	
Lyon-10368 (SacA-34115)	2012	D6	niv. 4	burnt bone	5520 ± 30	4449-4331	
Lyon-10369 (SacA-34116)	2012	D6	niv. 5	Charcoal	5575 ± 30	4458-4353	
Lyon-11540 (SacA-38689)	2013	B5	US 5	Charcoal	5485 ± 40	4447-4258	
LTL-14985A	2014	B4/ B5	US 06 st.65	Charcoal	5626 ± 45	4541-4360	
LTL-14986A	2014	C7	US 12 st.69	Charcoal	5719 ± 40	4683-4463	
Lyon-13482 (SacA-47792)	2015	E3	US 32	Charcoal	5420 ± 35	4346-4179	Chalcolithic
Lyon-13484 (SacA-47794)	2015	I6	str.97	Charcoal	5340 ± 35	4316-4051	
Lyon-13483 (SacA-47793)	2015	I6	US 30	Charcoal	5400 ± 35	4341-4077	
Lyon-13485 (SacA-47795)	2015	I4	st.127	Charcoal	5435 ± 35	4347-4050	
BETA-510630	2018		US 52 st.187	Charcoal	5640 ± 30	4542-4371	
BETA-510631	2018		US 57, next to st.104	Charcoal	5770 ± 30	4703-4545	
LTL-14987A	2014	D7	US 14 st.71	Charcoal	6174 ± 45	5289-4995	Late Neolithic
BETA-393561	2014	B6	US 18 st.73	Sediment	19750 ± 70	22020-21685	Upper Palaeolithic

The results of species and anatomical determination of the bones have been presented in table form. The material was also studied in terms of the proportions of specific parts of the carcass, morphology, age, sex, pathologies and evidence of butchering. Osteometric measurements essential for study of animal morphology were based on guidelines presented by A. Driesch (1976) [3] and A. Lasota-Moskalewska [4-5].

The materials are zooarchaeological assemblages of the Getahovit-2 cave 2018 excavations. Over 1095 bone particles were examined of which 650 bones were identified. The

identification of the bones based on several references [6-10].

The wild ungulates remains presented by Roe deer *Capreolus capreolus* 22% which were the highest percentage. 13% are Equid remains, wild boars *Sus scrofa* 16% and sheep and goats *Ovis aries/ Capra hircus* 19%. There are also Cattle *Bos primigenius* remains 3%. Also Fox 9%, domesticated dog 3%, bird remains 3%, rodent remains 9% and reptile remains 3% was found. A summary is given in table (Table 2, Figure 5) from most of levels.

Table 2. NISP and MNI of osteological remains from Getahovit-2 cave.

Class/Genus/Species	Levels/US							
	53, 51, 54, 55		56, 57, 58		52, 49		St 65	
	NISP	MNI	NISP	MNI	NISP	MNI	NISP	MNI
Ovisaries/ <i>Capra hircus</i>	31	2	7	1	45	2	6	1
<i>Bos primigenius</i>	47	1						
Equidae	39	1	4	1	14	1	10	1
<i>Sus scrofa</i>	92	4	3	1	10	1	-	-
<i>Canis familiaris</i>	5	1	-	-	-	-	-	-
<i>Vulpes vulpes</i>	22	2	-	-	4	1	-	-
<i>Capreolus capreolus</i>	239	6	-	-	50	2	-	-
Rodentia	14	2	2	1	-	-	-	-
Reptilia	2	1	-	-	-	-	-	-
Aves	-	-	-	-	4	1	-	-

*NISP- Number of identified species.

MNI – Minimum number of individuals.

4. Discussion

The presence of wild species (deer, boar, etc.) throughout the stratigraphic sequence, suggests that hunting was likely still practiced to some extent. Cutting marks and marrow were seen on 14.6% of the assemblage (Figure 6). 9.5% of total bones were burned (black, brown and white) (Figure 7), with 1% showing partial burnt areas, interpreted as an indication of roasting. Long bone ends would have been

revealed to the flame and burned, while the shaft, which presumably remained covered by flesh, is unburned. The presence of this kind of burned bones seems to indicate that some body parts were roasted after disjuncting [11]. Gnawing damage from carnivores are present in some of the Getahovit assemblages, but these traces are extremely rare.

The age at death of the animals was recorded through the stages of eruption, replacement and wear of teeth on mandibles [12-15]. The age at which domestic animals are slaughtered reflects the relative value placed on the different

products that can be extracted from the animal (meat, milk, wool). Payne (1973) established that meat production required massive slaughtering of young and sub-adult males between 6 and 18 months, whilst specialized milk production was characterized by the killing of around 50% of very young lambs (before the age of two months) (table 3).

Carnivorous and meat sharing are central features of the social lives of cave occupied hunter-gatherers, such that these behaviors must embody important evolutionary developments in locals' economics and social relationships. Meat is the most essential foods that humans may eat, and it is among the most difficult resources to harvest from the environment. Roe deer was the main prey animal throughout the Chalcolithic occupations of Getahovit-2 Cave. Later, the faunal assemblage suggests a mixed economy for this cave occupiers dominated by the husbandry of sheep and goats.

The age mortality profile suggest that the earliest domesticates were mainly exploited for their meat, with milk production increasingly becoming an important component of their subsistence practices.

Table 3. Mortality patterns for Getahovit-2 animal remains.

species	Juvenile	Prime adult	Old adult
Ovisaries/ Capra hircus	3	3	-
Bosprimigenius	-	1	-
Equidae	-	4	-
Susscrofa	-	5	1
Capreolus capreolus	3	3	2

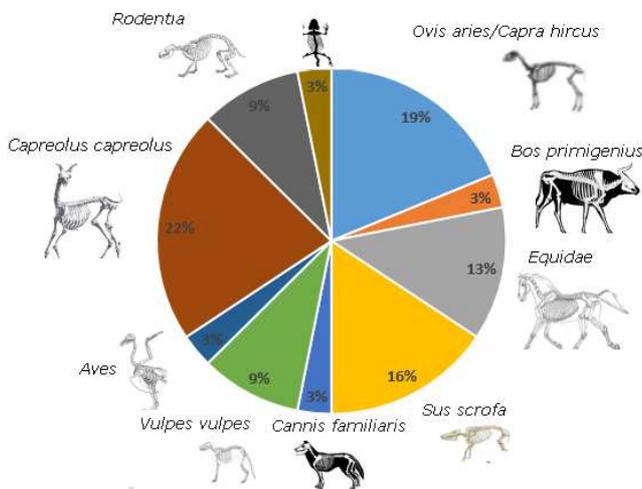


Figure 5. Animal remains species in Getahovit-2 cave.

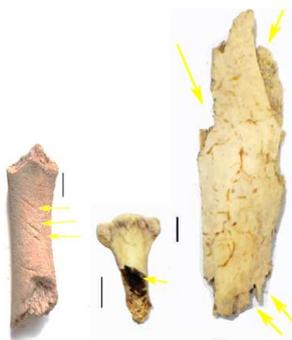


Figure 6. Cut marks on Getahovit-2 cave bone remains.



Figure 7. Burnt bone remains from Getahovit-2 cave.

5. Conclusion

Important axes of behavioral change in Eneolithic hominins include hunting tactics, technology, food transport and processing behaviors, and social feeding habits. A good number of Pleistocene and Chalcolithic sites in Armenia provide clear evidence of large-game hunting and of prime-biased prey selection in particular (e.g., Areni-1 cave). Getahovit-2 Cave extends the history of this distinctly human niche characteristic back to at least 4703-4545 cal. BC years ago and probably hunted large-game animals with hand-held wooden spears or something else (not clear enough). Although well-crafted in some cases (55), the rather basic nature of these weapons underscores the necessity of close cooperation among hunters, because the body weights of some prey (e.g., Bos) greatly exceeded that of the individual hunters. Also important is the observation that the hunters delayed consumption of high quality meaty parts until they could be moved to the cave, a central place where sharing would have been inevitable.

It is reasonable to expect that occupiers of Chalcolithic periods lived in social groups, but the patterns of cooperation could have differed greatly with time, including the manner in which meat was distributed and consumed within the group. The behavioral implications of the cut-mark results for Getahovit Cave will remain difficult to evaluate until more similar cases are examined for cut-mark, but some speculation is in order. Hypothetically speaking, a simpler or less evolutionarily derived model of meat consumption could be appropriate for the Chalcolithic Getahovit Cave. Beside these, many bone-made cutting tools were explored from the excavation site, which was quite a conclusive evidence of hunting activity of the occasionally occupiers of the Getahovit-2 cave.

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