

ՀՆԱԳԻՏՈՒԹՅՈՒՆ ԵՎ ԱԶԳԱԳՐՈՒԹՅՈՒՆ ARCHAEOLOGY AND ETHNOGRAPHY

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GETAHOVIT-2 ARCHAEOLOGICAL SITE IN ARMENIA: MOLLUSKS ENVIRONMENT

Key words: Archaeomalacology, Armenia, Getahovit-2 cave, Chalcolithic, Upper Paleolithic, mollusks remains, palaeoenvironment.

Introduction

Mollusks are the most important members of the animal kingdom and have played important roles as biological evidence in many geological matters. Thereafter, the fossil mollusks were palaeoenvironmental evidences, that can refer to the human subsistence¹. In fact, mollusk remains can supply archaeologists with

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¹ Magaritz, Heller 1983, 243–255, Goodfriend 1992, 665–685, Rousseau 1991, 195–209, Rousseau, Wuc, Guoc 2000, 199–206, Shipton *et alii* 2000, 197–233.

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lots of valuable information such as food exploitation, trade routes, ornaments and jewelry, tools and containers, etc².

Besides being tools or decorations, large mollusk species are used as food. Some species can be used for the treatment or prevention of certain diseases and for the production of drugs from their shell or soft body³. Gutierrez Zugasti has declared⁴ about the Early Holocene land snail exploitation in Northern Spain. Mollusk remains of Areni-1 cave (bird cave) have been studied. The results of the investigation suggest that the climate regimes, vegetation and environment of the Late Chalcolithic and the Medieval Periods in Armenia are similar to the present⁵.

Getahovit-2 Cave Site Excavation and Stratigraphy

The Chalcolithic period of Armenia in general and the Getahovit – 2 cave in particular have a special position, due to both environmental and archaeological contents. This cave is a perfect example of a site used by pastoralists during the Chalcolithic period in the region and the first to have been fixed and well-studied. The small cave of Getahovit-2 is located on the valley formed by the Khachaghbyur river (the tributary of Aghstev) at the elevation of ca 968 m a. s. l., in between modern villages Yenokavan and Getahovit (Tavush region, north-east Armenia) N 40°54'38.5'', E 045°05'59.7. It is one of the numerous caves located on the terraces and vertical, sheer cliffs of the canyon (Figures 1 and 2). There are two halls in the cave: the first one, opened to the south, covers an area of 64 m², while the second one is smaller and can be accessed through a narrow passageway. Excavations of 2011–2017 at Getahovit cave were conducted by the Armenian-French joint project «Mission Caucasus». The archaeological investigations of the site yielded nearly 2 m deep cultural deposits with quite well-defined, medieval period horizons (11–13th cent. AD), separated by a sterile layer from the level of the Chalcolithic period. Finally, with the help of deep test sounding we discovered the horizon of the Upper Paleolithic period (22020–21685 Cal BC). It was initially covered with thick geological sediments. Based on radiocarbon dating the Chalcolithic period of Getahovit-2, the cave can be placed in the middle sequence of the chronological chart. Moreover, the data from the

² Lubell 2004, 77–98.

³ Barker 2001, 572.

⁴ Zugasti 2011, 36–48.

⁵ Zarijian *et alii*, 2018, 18–22.

2014 excavations showed the presence of very early Chalcolithic period (5289–4995 Cal BC) which is extremely important, because the time range still remains unknown in the region in general and in Armenia particularly. And finally, with the help of deep test sounding below the sterile layer, the Upper Paleolithic horizon was determined and verified in the cave. In 2018, further excavations were undertaken by the Institute of Archaeology and Ethnography, NAS RA, with the financial support of the Ijevan Wine-Brandy Factory.

The chronological chart of the site can be described as mentioned in the tables (Tables 1 and 2).

The first level in the cave is represented by several horizons of the Medieval period, that differed by time ranges and intensity of occupation. But the most impressive fact was the discovery of the unusual phenomena of burials inside the cave. This level was separated from the rest by the sterile strata (level 2)⁶.

Level 3 represents the Chalcolithic period occupation and can be divided into two phases according to the data of radiocarbon analyses – middle and early Chalcolithic. The horizons of the middle Chalcolithic period are seven, and the most intense activity is apparent in the last occupation layers inside the cave. The cave is also unique because of the coprolites layers, which indicate various horizons of the Chalcolithic period. It was possible to follow the different stages of accumulation of burnt, mineralized residues of the sheep and goat dung. The process of the accumulation of layers in the cave gives us an exceptional opportunity to study the life and the lifestyle of the region's ancient pastoralists.

Level 3 is represented by horizons 1, 2 and 3. Horizon 1 includes US 31, 33–2015 (US 30=32=35). It has mostly no structures, however, traces of previous activities are extant. The most interesting and long-term occupation during the middle Chalcolithic was Horizon 2 (2016- US 34=36, 2014- US 6, Layer 5, US 37) with pits, hearths and even the remains of basic stone masonry, which was probably used as a bench. The next horizons, N 4 and 5, represent a short visit period and contain minor traces of occupation. The sub-horizon 5a that includes US48 a, b (2017 excavations), has another composition and is very well correlated with US 11 and US 12 from 2014, where the first was determined as a yellowish, compact layer with an absence of materials, and the second one was compacted and yellowish grey, with some finds of charcoal pieces and bones, which is quite

⁶ Kalantaryan *et alii*, 2012, 7–23.

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similar to US 48b. The descriptions made during 2014 season were well correlated with whatever was described in 2017. Even though there were few finds of obsidian flakes and bone remains, those layers (US 48 a, b) seemed to be nearly sterile, and the absence of structures can also be regarded as a clear sign of non-occupation or short-time visits (Fig. 3).

Finally, very light, episodic traces seen on the mud layer (US 52) were from two hearths. This layer separated the earlier Chalcolithic Horizon 7 from the previous ones. The 14C data from one of the structures showed a time range of 4542–4371 cal. BC. The main layer with the traces of Chalcolithic occupation (US 51, 53 – west and US 54, 55 – east) excavated during the season of 2018, was preserved under a layer nearly 10 cm thick of some muddy sediment that entered the cave from the southeastern part. In general, the layer was represented by hearths, which differed from each other in terms of structure and the intensity of use. It was thick enough, in some places, to provide an obvious indication of two phases of the same occupation, in some cases there were signs of hearth reuse (for example, str. 213). The fireplace–structure 213 (from where we did the selection of several types of mollusks) also belonged to the mentioned horizon 7, indicated by more intense traces of activity of hunters and herders. It was one of the double used fireplaces, placed at the H5. Its last use appeared in the layer we marked US 54 with the sizes NS-0.43, EW-0.38.4m, alt 2.27–2.34m⁷(Fig.5).

The second cluster of structures belonging to the same layer, appeared later (US 57), perhaps due to the sharp decline of the southeastern position of the layer. The only one known for now – the early Chalcolithic horizon is singled out as Horizon 8 and seems to be the first with traces of the Chalcolithic users who entered the cave to provide themselves with a temporary lodging. The Lower Levels 4 (US 15) and 5 (US 16) represent the geological sedimentation (categorized by the geomorphologist as fluvial and alluvial). They cover the horizon (Level 6, US 17, US 18) with the most interesting material, marked by occupation traces from the Upper Paleolithic. A small pit was discovered during the excavations of 2014, along with an assemblage of microliths.

It is the deepest level, reached in a deep sounding, excavated in 2014. Situated in the northwestern part of the cave, it appeared at a depth of about 3.2 m and lay directly on the bedrock, which in this place had a steep slope. However,

⁷ Kalantaryan, Ghanem 2019, 1–33.

the virgin soil has so far not yet been reached on the terrace side, where other earlier levels probably remain to be discovered⁸.

The accumulation of the mollusks with more than 600 specimens had been discovered (fig.5) during the 2014 excavations, when deep sounding was done. It was a hole where the mollusks had been concentrated (Str. 72). It was unearthed at B5 and appeared under the geological levels 4 and 5 (Fig. 3). Those levels separate the Chalcolithic period horizons from the layer of the occupation of the Upper Paleolithic period.

Level 4 (US 15), having nearly half a meter of thickness, is sterile and consists of a very compact clay-like sediment characteristic of deposits that have accumulated under a warmer, more humid climate. This would have been the phase of warming that marked the beginning of the Holocene. Just as the preceding one, this layer has a steep slope from the inner space of the cave towards the terrace.

Level 5, is composed of very compact and stony deposits presenting an almost sterile layer that is characteristic of a period of gelifraction (Fig. 4). This in all likelihood corresponds to the cold phases of the end of the Pleistocene, from the Late Glacial Maximum to the Younger Dryas. This layer covers the deepest level, reached in a deep sounding, done in 2014, that represents the Upper Paleolithic (Beta-393561: 19770 ± 70 BP or 22020–21685 cal. BC) occupation and is apparently the result of the destruction of the lower layer. At the very beginning of this layer at the northern part we could observe the reddish traces that appeared as a result of iron oxide brought by water. Those traces lead to the location of the site where mollusks had been concentrated. The fact that they were also colored by iron oxide could be the direct evidence of the mollusks being moved by water streams (fig.6).

Materials and Methods

The materials presented in this paper originate from Getahovit-2 cave (US 12, 36, 49, 51, 53, 54, 56, 57) excavated during 2014–2018 excavation seasons. A comprehensive sampling strategy was adopted at the site. Dry sieving was used to recover the mollusks. The samples were sieved using a 1 mm sieve. Of the sieved material in the >1mm fraction, all organic remains (plants, insects, micromammals), bones, pottery fragments, etc., were separated via hand-picking

⁸ Chataigner et alii 2020, 3.

and labeled appropriately. The samples were scanned under a lamp with a magnifying glass to aid their description. The identification of the mollusks was achieved by comparisons with modern specimens' collections of NAS RA Scientific Center of Zoology and Hydrogeology and by consulting the of publications⁹. The minimum number of individuals have been counted from the most abundant mollusk's part. (Plate 1).

Results

The 13 molluscan species found in Getahovit-2 cave's strata are presented in a table (table 2). The studied material consists of 1151 shells or known shell fragments which belong to 8 families of land snails' Class Gastropoda: Family Pomatiasidae (*Pomatias rivulare*), Family Endodontidae (*Discus ruderatus*, *Punctum pygmaeum*), Family Enidae (*Napaeopsis hohenackeri*, *Turanena* sp.), Family Helicidae (*Helicella derbentina*, *Helicella crenimargo*, *Helix buch*), Family Valloniidae (*Vallonia costata*), Family Cionellidae (*Lubricella* sp.), Family Pupillidae (*Pupilla interrupta*, *Lauria cylindracea*), Family Vertiginidae (*Columella edentula*).

Discussion

The most shell-rich level was the Upper Paleolithic US 17–18 where the most concentrated species was *Napaeopsis hohenackeri* (L. Pfeiffer, 1848), many of the specimens were fragmented, but half of them was completely unimpaired. The Str. 213 (fire place) was the most taxa-diverse site (this has no explanation either on the archaeological or biological base, we may be able to discuss in future, after we study the malacofauna of similar fire places in the same cave). The systematic study reveals that the *Pomatias rivulare* are the most abundant species in the site. It inhabits calcareous terrains, mostly in the leaf cover deciduous forests at medium and high humidity. It is thermophilic, but during dry periods – extremely drought-resistant. Therefore, the big amount of Mesophilic and thermophilic species with relatively high drought resistance in the cave can be accounted for by the water resource or high humidity inside.¹⁰. As a result of the mentioned case the species *Pomatias rivulare* is the dominant for both Chalcolithic and Medieval ages (Chart 1) and has a clear preference for milder climatic

⁹ Akramowski 1971a, 108–111, Akramowski 1971b, 3–12, Akramowski 1976, 268p, Sysoev, Schileyko 2009, 454, Likharev 1958, 464–476.

¹⁰ Irikov 2002, 89–102.

conditions, while *Napaeopsis hohenackeri* lives on or very close to Limestone cliffs, on mountain steppe and xerophilous woodlands. This means that the Paleolithic climate tends to be aridic.

The absence of shells in other strata (for example US58, US52, etc.) could be a reflection of the introduction of new methods by the inhabitants forbidding the distribution of snails in the cave.

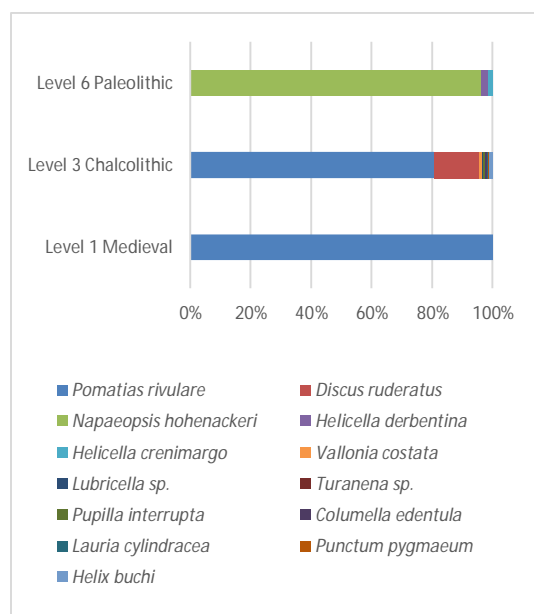


Chart 1. Distribution of mollusks at different levels.

The distribution figure of those shells shows that, due to the great number of the mollusks there has been no nomads' occupation of the site, since nomads were known to be fortunetellers or illusionists and could use the shells for that purpose. Moreover, there is no serious evidence about the existence of nomads in nearby regions.

The shells in this cave might have been brought about by storms, especially because many of the shells show water-induced abrasion that could be used for mudbrick construction. Neither are there any signals for snails that could be used for mudbrick construction, in spite of the nearby river and the opportunity of mud-brought snails from the river banks (the most suitable habitat for the mollusks).

The kill-holes on the shells by the molluscan predators (insects, spiders, etc.), indicate principally about the environment and cave surrounding fauna.

Shells were non-edible, because the species consumed for food tend to be considerably larger and their shells are fragmented to some degree, with sharp,

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crisp break edges. The shells bear no signs of these, but kill-holes from predatory mollusks.

All the identified mollusks remains were land snails, which occur on almost every archaeological site, and here they are usually the result of natural deposition. Land snails are the only group of mollusks, which might have entered the cave by themselves, and were not necessarily brought in by humans, or their occurrence in massive form may reflect a very short human occupation of the cave, since they are typical of abandoned sites.

The mollusks remains of Getahovit-2 cave are the ecological indicators for the Chalcolithic and Paleolithic environment of Armenia. Finally, the land snail assemblages suggest that the climate regimes, vegetation and environment of that age did not sharply differ from what is today.



Figure 1. Getahovit-2 cave location in Armenia.



Figure 2. Getahovit-2 cave.

Getahovit-2 2019

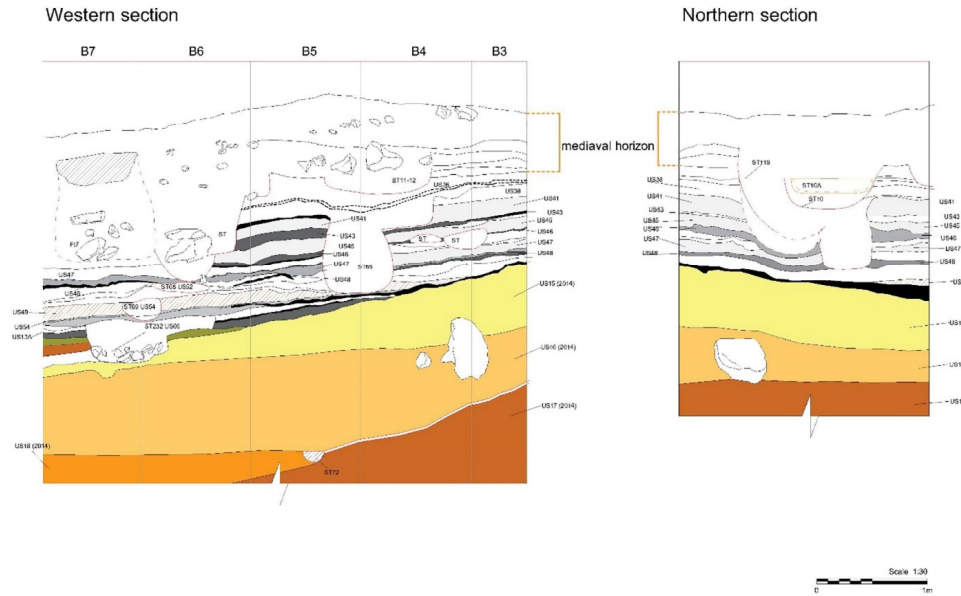


Figure 3. Stratigraphy of the Western and Northern Sectors of Getahovit-2 Cave.

Levels & Horizons		Stratigraphic Units	Dates
Level 1 Medieval			
	Horizon 1	US3 (TR2)	
	Horizon 2	Leyer2 (2011)	1021-1206 AD
	Horizon 3	US19, 20	897-1024 AD
	Horizon 4	US21	
Level2 Sterile			
	Sterile	US4=US8	
Level3 Chalcolithic			
Middle Chalcolithic	Horizon1	US31, 35	4341-4077 BC
	Horizon2	US36, 37	4447-4258 BC
	Horizon3		4541-4360 BC
	Horizon4	US44, 45	
	Horizon5	US46, 47	
	Subhorizon 5a Sterile	US48	
	Horizon6	US52	4683-4463 BC
	Subhorizon 6a (Mud Layer (Sterile))	US49	

	Horizon7	US53, 54 (US57), str.213	4703-4545BC
Early Chalcolithic	Horizon8	US14 (2014)	5289-4995 BC
Level4 Geological fluvial sedimentation			
		Lower part of US15 (2014)	
Level5 Geological co-luvial sedimentation			
		US16 (2014)	
Level 6			
Upper Paleolithic	Horizon1	US18 (2014)	22020-21685BC

Table 1. Chronological Chart of Getahovit-2 Cave Based on Radiometric Dating

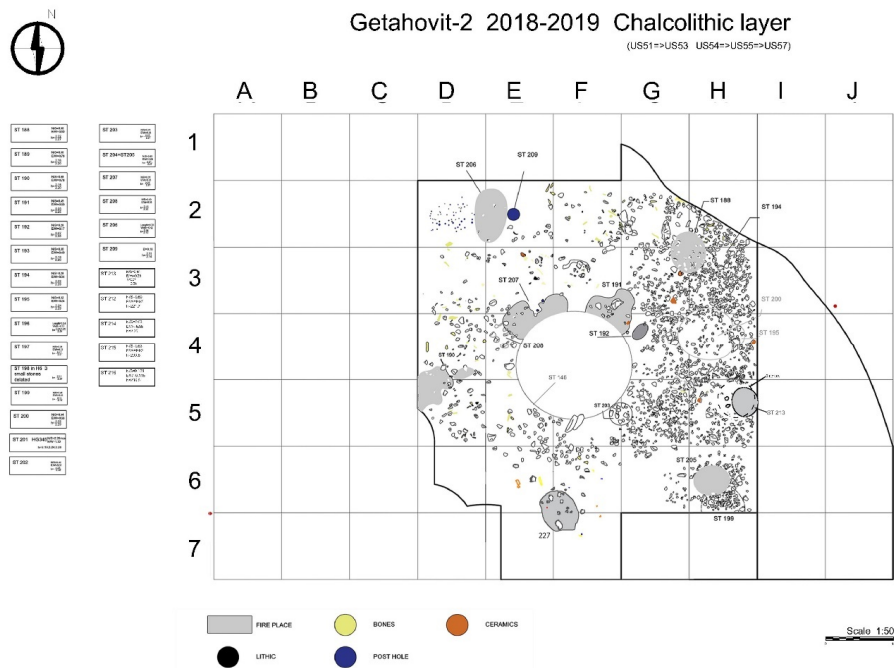


Figure 4. Plan of the Chalcolithic Layer

Table 2. Getahovit-2 Excavations and Stratigraphy.

Code Lab.	Year	Sq.	Level	Mat.	Date BP	Date AD (95%)	Period
1LTL12043A	2011	C7	dec. 3	Charcoal	933 ± 45	1021-1206 AD	Middle-Ages
Lyon-10370 (SacA-34117)	2012	D7	niv.3, F10, near the skull	Charcoal	1060 ± 30	897-1024 AD	
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	Chalcolithic
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	C7 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	
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

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Figure 5. Mass of Shells from Getahovit-2 Cave.



Figure 6. A Layer Where Mollusks Concentrated.

Table 2. Description of Mollusks Samples of Getahovit-2 Cave.

No.	Species	Origin	Class: Family	US	MNI	Ornament or not
1	<i>Pomatias rivulare</i> (Eichwald, 1829)	Land snail	Gastropoda: Pomatiasidae	12, 36, 49, 51, 53, 54, 56, 57	475	NO
2	<i>Discus rudersatus</i> (Ferussac, 1824)	Land snail	Gastropoda: Endodontidae	49	6	NO
3	<i>Napaeopsis hohenackeri</i> (L. Pfeiffer, 1848).	Land snail	Gastropoda: Enidae	17-18	630	NO
4	<i>Helicella derbentina</i> (Krynicky, 1836)	Land snail	Gastropoda: Helicidae	18	15	NO
5	<i>Helicella crenimargo</i> (L. Pfeiffer, 1848)	Land snail	Gastropoda: Helicidae	18	10	NO
6	<i>Vallonia costata</i> (Muller, 1774)	Land snail	Gastropoda: Valoniidae	Str 213 (fire place)	3	NO
7	<i>Lubricella</i> sp.	Land snail	Gastropoda: Cionellidae	Str 213	1	NO
8	<i>Turanena</i> sp.	Land snail	Gastropoda: Enidae	Str 213	1	NO
9	<i>Pupilla interrupta</i> (Reinhardt)	Land snail	Gastropoda: Pupillidae	Str 213	2	NO
10	<i>Columella edentula</i> (Draparnaud, 1805)	Land snail	Gastropoda: Vertiginidae	Str 213	2	NO
11	<i>Lauria cylindracea</i> (Da Costa, 1778)	Land snail	Gastropoda: Pupillidae	Str 213	1	NO

12	<i>Punctum pygmaeum</i> (Draparnaud,1801)	Land snail	Gastropoda: Endodontidae	Str 213	2	NO
13	<i>Helix buchi</i> Dubois de Motpereux, 1830	Land snail	Gastropoda: Helicidae	54	3	NO

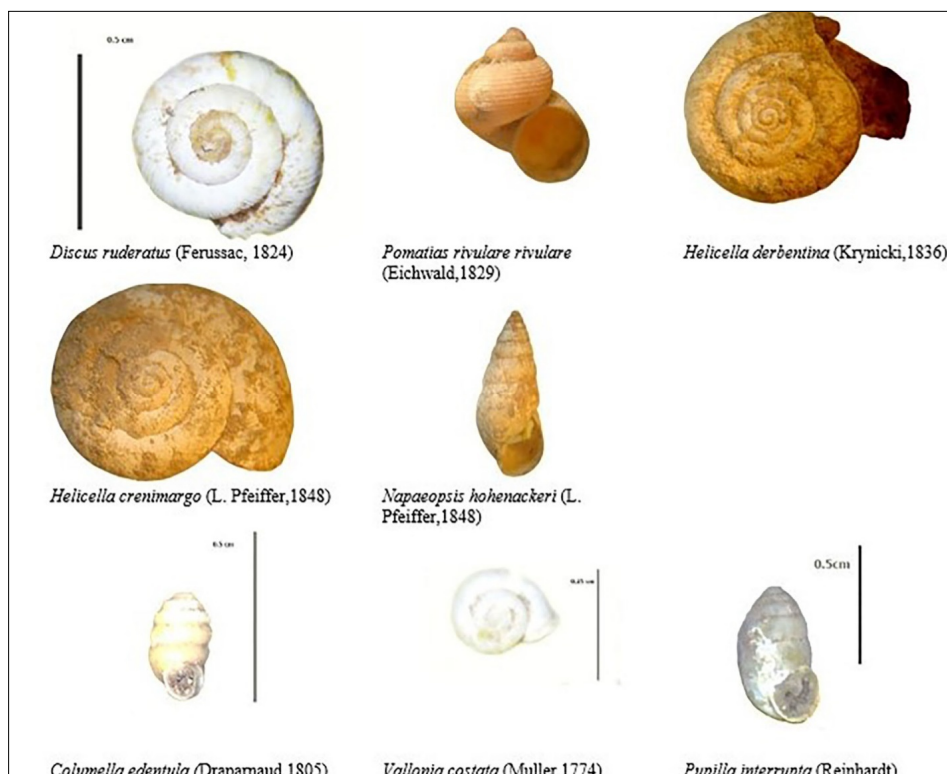


Plate1. Mollusk remains from Getahovit-2 cave.

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ԶԱՐԻԿՅԱՆ Ն., ՀԱՐՈՒԹՅՈՒՆՈՎԱ Լ., ՔԱԼԱՆԹԱՐՅԱՆ Ի.

Ամփոփում

Քանալի բառեր¹ հնախխունջաբանություն, Հայաստան, Գետահովիտ-2 քարանձավ, պղնձիքարիդար, վերին պալեոլիթ, փափկամարմիններ, պալեոմիջավայր:

Գետահովիտ-2 քարանձավի հնագիտական պեղումներից ձեռք բերված խեցիների ուսումնասիրությունը հնարավորություն է տալիս ամբողջացնել տարածաշրջանի հնախխունջաբանական տվյալները, հասկանալ գտնված նմուշների քանակական և տեսակային կազմի փոխառնչությունները մշակութային շերտերի հետ:

Քարայրը կարևոր նշանակություն ունեցող բազմաշերտ հնագիտական հուշարձան է, ուր միջնադարյան հորիզոններից բացի, բացվել են նաև պղնձիքարիդարյան ժամանակաշրջանի, ապա՝ դրանից բաժանված, վերին քարիդարյան ժամանակաշրջանի բնակության հետքեր:

Մի շարք հազվագյուտ մշակութային ժամանակահատվածների առկայությունը և դրանց ուսումնասիրությունները հուշարձանում կարևոր դեր են խաղում տարածաշրջանի հնագիտական մեկնաբանության մեջ: Ավելին՝ առաջին անգամ Հայաստանում, նաև՝ Կովկասյան տարածաշրջանում, Գետահովիտ հուշարձանից ի հայտ են եկել և ուսումնասիրվել վաղ որսորդ – անասնապահների հետ այստեղ ժամանակավորապես կայանած մանր եղջերավորների հոտերի թողած թրքաշերտերը:

Գետահովիտ-2 քարանձավի համակարգված պեղումները թույլ են տվել հավաքել հազարից ավելի փափկամարմինների խեցիներ, որոնցից որոշվել են 8 ընտանիքների պատկանող 13 տեսակներ: Պարզ է դառնում միջնադարյան և պղնձիքարիդարի ընթացքում փափկամարմինների գերակայող տեսակը: Հետաքրքիր էր վերին պալեոլիթյան շերտերում բացված փափկամարմինների մեկ ընտանիքին պատկանող տեսակի մեծ կուտակումը, ինչը հատուկ կլիմայական իրավիճակի մասին է խոսում:

Գետահովիտ-2 քարայրից գտնված ցամաքային տեսակի փափկամարմինները Հայաստանի պղնձիքարիդարյան և պալեոլիթյան միջավայրի էկոլո-

գիական ցուցիչներն են, բնակլիմայական առանձնահատկությունների վկայությունները:

АРХЕОЛОГИЧЕСКИЙ ПАМЯТНИК ГЕТАОВИТ-2 (Армения): СРЕДА МОЛЛЮСКОВ

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Резюме

Ключевые слова: археомалакология, Армения, пещера Гетаовит-2, энеолит, верхний палеолит, моллюски, палеосреда.

Изучение раковин моллюсков, найденных во время археологических раскопок пещеры Гетаовит-2 (Армения, Тавуш), дает возможность восполнить археомалакологические данные региона, а также понять взаимосвязь количественно-видового состава выявленных экземпляров с культурными слоями.

Пещера – важнейший многослойный археологический памятник, где кроме средневековых были обнаружены слои энеолитического периода, а также отделенные от него стерильным слоем следы проживания периода верхнего палеолита.

Наличие в пещере ряда уникальных культурных периодов и их изучение имеет важное значение для археологической интерпретации региона. Более того, впервые в Армении и на Кавказе в целом в пещере Гетаовит обнаружены и изучены остатки древних копролитов. Последнее означает, что вместе с охотниками-животноводами в пещере находился и мелкий рогатый скот.

Систематические раскопки пещеры Гетаовит-2 позволили выявить более тысячи экземпляров раковин моллюсков, из которых удалось идентифицировать 13 видов, принадлежавших 8 семействам (таб. 2). Четко прослеживаются виды, доминировавшие в периоды средневековья и энеолита. Интересен факт большой концентрации моллюсков одного типа в

верхнепалеолитическом слое, что свидетельствует об особых климатических условиях.

Моллюски из пещеры Гетаовит-2 являются экологическими индикаторами энеолитической и палеолитической среды Армении. Наличие наземных видов улиток позволяет предположить, что климатические условия, растительность и окружающая среда той эпохи не очень отличались от современных.