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The Site of Karabi Tamchin: Introduction

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The site of Karabi Tamchin is a recently discovered, stratified Middle Paleolithic locality situated in the Crimean highlands. Its location provides an unusual opportunity for the investigation of Middle Paleolithic human adaptation to highland conditions in Crimea, as well as the effects on technology and typology by the absence of good-quality lithic raw material.

The Crimean Mountains extend for about 180 km along the southern tip of the peninsula, from Sevastopol to Feodosia. The Mountain Massif consists of three parallel ridges (Main, Internal, and External) running in a northeasterly direction. Each ridge terminates abruptly towards the south in a series of cliffs or steep escarpments and slopes away gently towards the north. Formed of Triassic and Jurassic limestone, the Main Ridge is the highest, reaching heights of up to 1500 meters above mean sea level (msl). The Main Ridge dominates the southern coastline, its limestone cliffs forming a dramatic headland. Several highland plateaus, called *Yailas*, Turkic for "summer pastures," lie along the Main Ridge at elevations ranging from 700 to 1000 m msl. The Main Ridge is bordered on the northwest by the Internal Ridge, which lies between 400 and 500 m msl, followed by the External Ridge, which ranges from 200 to 300 m msl. The Internal and External Mountain ridges form typical cuestas, their Cretaceous and/or Paleogene (Eocene) limestone bases incised by river valleys. The rivers take their source in the mountains and run north towards the plains before bifurcating either west or east, depending upon where they lie relative to the nummulitic crest on which the city of Simferopol is built.

The history of investigation of the Crimean Paleolithic goes back over a century. Today, several dozen Middle Paleolithic locations are known (Kolosov et al. 1993). Most are located in the foothills of the Internal and External Ridges of the Crimean Mountains, and are associated with good flint sources, predictable water supplies, numerous natural rockshelters, and temperate climatic conditions. In the past, only a few rockshelter localities and several open-air find-spots were known in the highlands of the Main Ridge. Aside from Karabi Tamchin, there is only a single highland site, Adji-Koba Cave, containing Paleolithic artifacts in mixed stratigraphic context. All other known highland locations are open air find-spots near the meteorological station on Karabi Yaila, and on the Yaltinskaya Yaila (Kolosov et al. 1993). The distribution of known Middle Paleolithic sites is explainable on the one hand by a relative lack of archeological research in the highlands compared to other areas, and on the other hand, by an absence of good raw materials for stone tool production. In addition, climatic conditions in highland regions of the Main Ridge are more severe than along the Internal or External Ridges: summer is shorter, and winter is longer and harsher, accompanied by strong winds and snowstorms. Although the Main Ridge gets the most rainfall in Crimea, most of the local streams and springs become dry by the middle of the summer. These factors will likely have affected the manner in which highland regions were exploited during prehistoric times.

Setting and Excavations

The site of Karabi Tamchin is situated at an elevation of about 740 meters msl, on the northwest edge of Karabi Yaila, the largest plateau of the Main Ridge of the Crimean Mountains. The site is located at the foot of the limestone escarpment that forms the edge of the plateau, above the wooded, steep slope of the deep Audjikli Ravine, at the bottom of which flows Tamchin Creek. This creek flows into the shallow Suat River, which is the eastern tributary of the Burulcha River.

The geological context of the site is linked with the local foothills of Upper Jurassic (J3) limestone that have been intensively eroded by karstic activity. There are more than two hundred caves, grottos, funnels, gaps, and others karstic formations within the Karabi Plateau (Dublyansky and Lomaev 1980). Several relatively deep karstic caves are situated in the same abrupt limestone cliff not far from Karabi Tamchin. One of these, the famous Adji-Koba Cave, is located only 70 m to the southeast of Karabi Tamchin.

Karabi Tamchin was discovered during the summer of 1996 by A.I. Yevtushenko and V.P. Chabai in a big, semi-circular fluting opening to the southwest. The surface of this area (18 m × 6 m) was covered by huge limestone slabs and blocks, which were interpreted as the remains of a destroyed rockshelter chamber, and the density of stones suggested a collapsed roof.

A test pit was dug at the edge of the discovered area. The deposits consisted of a sequence of loamy sediments, enriched by plate and angular gravel. These sediments were subdivided into five lithological strata. Four horizons of Middle Paleolithic flint artifacts and faunal remains were also recognized in the test pit. The upper horizons of the sequence were partially disturbed and contain few diagnostic artifacts.

Based on the initial test results, excavations were continued from 1999 through 2001 during summer field seasons. The main excavation area, of about 27 m^2, was made in the central part of the site, in order to discover both the whole stratigraphic sequence, as well as a full sequence of prehistoric occupations (Figure 15-1).

Since the archeological materials were in relatively soft sediments, the method of excavation followed that used during previous investigations at western Crimean Paleolithic sites (Chabai 1998b:177-181; Yevtushenko 1998a:280).

Heavily brecciated sediments were broken up prior to excavation using electric jackhammers. A one square meter, alphanumeric grid system was placed over the whole site area and excavations were carried out within these units. Elevation measurements used a single datum. The artifacts and bone from each level were mapped at a scale of 1:10, using a conventional sign system (typology of artifacts, bones, teeth, etc.). Elevations were recorded for the most important finds in each level of each square (tools, flakes, blades, large bones, special samples, etc.) on the maps. All excavated sediments were sieved through nested 5 mm and 1.5 mm screens. Samples for dating were selected from each undisturbed archeological level.

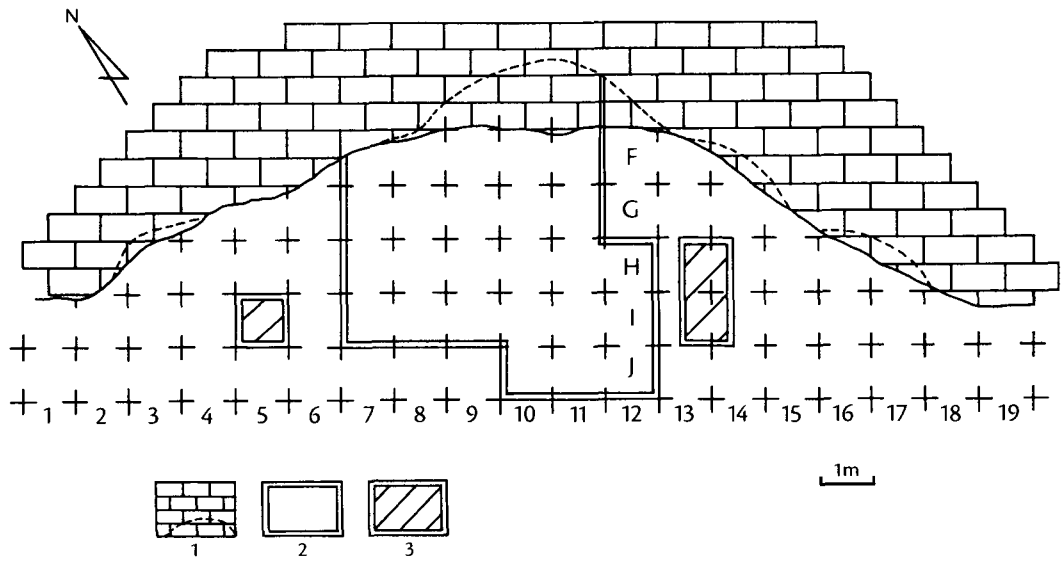

Figure 15-1—Plan of excavated area at Karabi Tamchin: 1–bedrock with karstic flutings; 2–main excavation area; 3–sondages.

Geology

Karabi Tamchin preserves a sedimentary record of rockshelter evolution, beginning with erosion/weathering of the initial shelter into the bedrock cliff. The bedrock is a thickly bedded, hard, micritic limestone, which strikes roughly north–south, and dips ca. 25° east. Over the course of infilling, concurrent with the episodic occupations, sedimentation was dominated by spalling of platy, angular *éboulis* from the roof and walls, interspersed with periods of geochemical weathering (dissolution), pedogenesis, and possible introduction of silt and clay from outside the shelter.

The sedimentary-pedogenic history of the shelter's infilling is registered in three main parts of the stratigraphic sequence (Figure 15-2). The lowermost deposits, resting on bedrock, of strata 7–4 are dominated by platy, angular *éboulis*, intercalated with thin finer-grained units that may reflect eolian or colluvial introduction of sediment during periods of slow *éboulis* accumulation. These deposits, and perhaps some overlying deposits now removed by erosion, were deeply weathered, resulting in the carbonate cementation of the lowermost units, and leaching of the overlying *éboulis*. The zone of cementation did not follow the stratigraphy of the existing sediments, but because it was essentially a pedogenic process conditioned in part by the topography of the bedrock base of the shelter, the zone of cementation cross-cut the buried deposits. As a result, strata are differentially cemented over the excavated area (Table 15-1). Thus,, the condition of the lowest deposits, those having the highest concentration of archeological materials, varies according to the topography of the base of the shelter just prior to deposition and according to the relative post-depositional cementation. Thicker deposits occur in the central part of the excavated area, and this is also where the greatest thickness of the cemented zone is found. Archeological Levels V and IV are concentrated there, with greater numbers of artifacts and bones apparently associated with thin silty beds on bedrock and between the lower platy *éboulis* layers of geologic strata 7 and 6. All of these deposits appear to have been laid down when the backwall of the shelter was forward of its present position, especially in the northwestern part of the shelter, and during the time that the roof of the shelter was the apparent source for most of the *éboulis*.

After those initial occupations, the back-wall of the shelter began to retreat, expanding the area of the shelter towards the cliff, and supplying new volumes of platy *éboulis* that were deposited as part of geologic stratum 4 and most of stratum 3. The line of the former backwall is clearly demarcated in the exposed area of the excavations. It trends from the center of the back part of the shelter to the west–northwest, and delineates the possible extent of the oldest occupation surfaces. Although the shelter became larger as the backwall retreated, increasing rates of *éboulis* deposition may have resulted in lower artifact densities for archeological Levels I-A and I, and also contributed to the disturbance of the shallowly buried materials associated with archeological Levels II/1 and II/2.

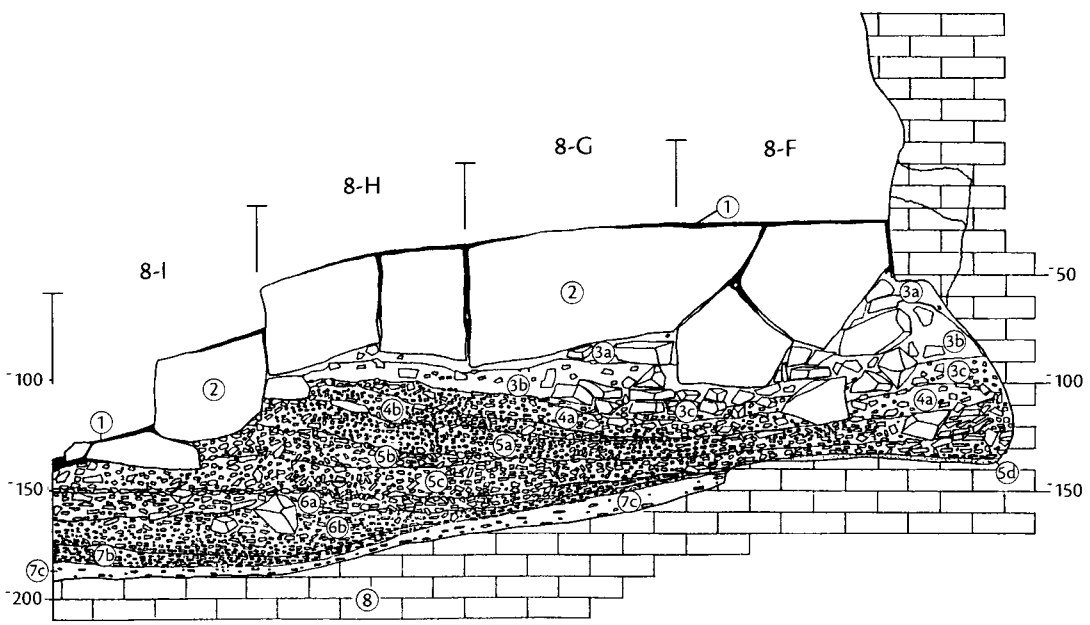

Figure 15-2—Karabi Tamchin: stratigraphic profile of line 8/9 F–I.

TABLE 15-1
Granulometry of Karabi Tamchin; shaded areas indicate the carbonate cemented sediments

Eboulis size fraction (mm)	*Sample depth (cm-bs)*	*Fines % (<2mm)*	*Eboulis wt % (mm)*		*Eboulis roundness*						*Small bone*		*Large bone*	*Bones/ kg*	*Artifacts*	
			2–4	*16–64*	*N*	*v w rnd*	*rnd*	*sub-rnd*	*sub-ang*	*ang*	*N*	*burn %*	*N*		*flakes*	*chips*
	19	21.3	13.8	48.9	174	0.03	0.13	0.16	0.28	0.41	33	0.03	8	43.6	0	0
	32	14.6	10.1	46.1	148	0.01	0.07	0.09	0.18	0.65	75	0.00	24	111.2	1	0
4–16	41	27.4	11.0	45.2	115	0.05	0.18	0.24	0.36	0.17	16	0.00	0	21.9	1	0
	48	21.3	9.8	52.5	71	0.17	0.18	0.20	0.32	0.13	20	0.05	10	49.2	0	1
	55	28.8	13.8	37.5	140	0.13	0.28	0.20	0.25	0.14	215	0.05	18	291.3	3	7
	62	27.6	6.6	46.1	89	0.11	0.19	0.28	0.21	0.20	133	0.06	5	181.6	1	14
	66	Limestone bedrock														
	19				36	0.00	0.06	0.11	0.36	0.47						
	32				39	0.00	0.08	0.13	0.44	0.36						
16–64	41				30	0.07	0.10	0.37	0.43	0.03						
	48				30	0.03	0.07	0.17	0.53	0.20						
	55				32	0.13	0.22	0.19	0.25	0.22						
	62				31	0.06	0.13	0.32	0.45	0.03						

After deposition of geological stratum 3c, *éboulis* deposition essentially ceased, and fine, loamy sediment filled the remainder of the back of the shelter, and an apparently long period of weathering commenced, resulting in the formation of the red soil B horizon that characterizes the upper part of the profile. Minor additional precipitation of pedogenic carbonates probably accompanied this, but with little apparent effect on the deeper buried materials that were already enveloped in the earlier carbonates. Note that the *éboulis* above the cemented zone is considerably more angular than in the cemented zone (Table 15-1). This scenario implies that there were two periods of weathering in the geologic history of the shelter, characterized by different climatic and/or temporal parameters. The earlier period of weathering occurred after the main Middle Paleolithic occupations, and is registered prominently by the rounded *éboulis* and the very strong cementation by pedogenic carbonates. The second weathering took place after the shelter was enlarged by spalling of the backwall. That weathering resulted in formation of a soil with prominent rubified argillic horizons, but little evidence of dissolution-rounding of the limestone *éboulis*. It is possible that this soil may include some colluvial parent material, derived from the surfaces above cliff, which included reddened clay/silt derived from erosion of older soils on the surface of the plateau; this can be investigated by micromorphological study of the soil in the shelter. The sequence of sedimentary and weathering (pedogenesis and dissolution) processes bears on the regional paleoclimatic sequence, as well as on site formation processes. The details of those paleoenvironments have yet to be defined. It is apparent, however, that Karabi Tamchin contains an important geologic framework for continued analyses of past environments and cultural use of the locality in the Upper Pleistocene.

Archeological Stratigraphy

As a rule, the different archeological occupations were separated from each other by thin sterile lenses of *éboulis*. The primary numbering of the archeological levels was based on the several cultural levels seen in stratigraphic sequence in the 1996 test pit. This general archeological sequence was adopted for all of the excavation area, but new levels were defined as needed during the 1999–2001 field seasons.

Level 0 consists of disturbed materials in modern humus (stratum 1).

Level I-A is disturbed materials in stratum 3c.

Level I is artifacts and bones material associated with geologic strata 4a and 4b. The materials of Level I are probably disturbed and were naturally mixed.

Level II/1 comprises the artifacts in disturbed sediments within stratum 5a.

Level II/2 is the compactly deposited artifacts and bones in the middle part of stratum 5c.

Level III occurs at the bottom of stratum 6b, and is separated from Level II/2 by both thick lenses of gravel at the base of stratum 5 and by sterile sediments of the upper part of stratum 6a. In squares 7-F/G, the lower part of these sediments contained strongly cemented *éboulis* of archeological Level III (in stratum 7a). Evidently, the artifacts and faunal remains of Level III are in situ, with little evidence of disturbance.

Level IV/1 is in the upper part of stratum 6b only along lines 7 and 8, while those deposits are archeologically sterile in others part of excavation area. In squares 7/8–H/I, the sediments containing Level IV were thicker than in other excavation areas.

Level IV/2 is associated mainly with the deposits of middle part of stratum 6b. The lower part of these sediments contained cemented deposits ascribed to stratum 7b.

Level IV-A was defined as the artifacts from greyish sediments of the upper part of geologic layer 6b, which filled the small depression into the surface of the cemented *éboulis* (about 1.5 m^2) in the central part of the excavations. Also, small numbers of artifacts (Level IV-A-BR) were found in thin greyish lenses of the lower part of the cemented sediments of stratum 7b.

Level V is heavily cemented sediments of geologic layer 7c, resting on the bedrock surface.

Finds in Level 0, deriving from the modern humus, consist of a mixture of artifacts and faunal remains from the Paleolithic, late Medieval, and, probably, Bronze Ages. The artifacts from the upper deposits, i.e., Levels I-A, I, and II/1, were recovered from disturbed lithological contexts. The materials from these levels are mostly pieces of mammal bones, with a few flint artifacts: too few for any technological and typological study. The cultural horizons of Level IV/1 contain too few artifacts for qualitative typological and technological description. In addition, the materials from Level IV-A were found in natural pits in the surface of the breccia and their origin is, as yet, unclear.

Thus, this preliminary report utilizes only artifacts from the four main in situ cultural levels, all excavated during 1999–2001: Level II/2, Level III, Level IV/2, and Level V. Artifacts are described by A.I. Yevtushenko in Chapter 20 under the same system used to analyze the Middle Paleolithic assemblages of Western Crimea (Chabai and Demidenko 1998), with some modifications.

Chronology and Absolute Dating

Dating the archeological levels Karabi Tamchin has proven difficult. ESR and Uranium-series dates could not be obtained because of the limited thickness of the deposits, their heterogeneous nature, and the presence of standing water in the excavation area. As a result, only AMS dates, obtained from four bone samples, are available.

Four long bone fragments were selected from cultural Levels III and IV for AMS dating after the 1999/2000 field season. Dating was carried out at the Radiocarbon Accelerator Unit, Oxford University (Great Britain).

Two samples from Levels III and IV/2 failed to produce dates because of low collagen yield. The other two provided the following dates:

Level III, square 8-I: OxA-10883, $\delta^{13}C$ = -19.8%, age: > 42,400 uncalibrated years BP.

Level IV/2, square 10-G: OxA-10884, $\delta^{13}C$= -20.1%, age: > 41,200 uncalibrated years BP.

Level V, square 12-I: OxA-11387, $\delta^{13}C$=-21.2%, age: > 29,800 uncalibrated years BP.

Thus, available absolute dates of Karabi Tamchin Level III and Level IV/2 can only indicate that Levels III, IV, and V are older than ca. 41,000 uncalibrated years BP. It is important to note that materials of Level III and Level IV/2 are represented by typologically and technologically distinct lithic industries: the Western Crimean Mousterian (Level III) and the Crimean Micoquian (Level IV/2). Also, materials from Level IV-A, which were deposited between Level IV/2 and Level V, are characterized by Levallois cores and blanks that occur commonly in Western Crimean Mousterian (WCM) industries, while Level V exhibits features of the Crimean Micoquian. WCM occupations at Kabazi II were present for about 20,000 years, from the first Middle Glacial Stadial (pre-Hengelo Interstadial) to the second Middle Glacial Stadial (post-Les Cottés Interphasial), inclusively (Chabai 2000b). Taking into account that the earliest WCM assemblages at Kabazi II Level IIA-2 correspond with the first Middle Glacial Stadial, between Moershoofd and Hengelo (or Vytachiv vt b2-b1, according to the Ukrainian geochronological scheme) (Gerasimenko 1999), the WCM occupations of Level III and Level IV-A at Karabi Tamchin must be as old or older than any of the occupations at Kabazi II.

The oldest Crimean Micoquian assemblages (Kabazi II Units IV-VI) date to the Eemian (Pryluky -Kaydaky) Interglacial (Chabai in press). On other hand, the available AMS dates for Buran-Kaya III Level B1, (28,520 ± 460; 28,840 ± 840460), show that the Crimean Micoquian industries could date as late as the Arcy (Denekamp) Interstadial (Chabai et al. 1998). Thus, the Crimean Micoquian of Karabi Tamchin

Level IV/2 dates well before the end of the Micoquian, but, given the paleoenvironmental data, it certainly does not date to its earliest Interglacial occurrence.

The microfaunal remains from Level II/2, Level III, and Level IV/2 (Markova, Chapter 17) are characteristic of open, steppe-like landscapes, but the sediments comprising the matrix of Level II/2 accumulated during a relatively warm phase, possibly the Bryansk Interstadial (between 33,000 and 24,000 BP). The assemblage of Level V is characterized by the presence of a relatively primitive species of *Ellobius talpinus* and thus, this level may be significantly older than the others, possibly even dating to the Last Interglacial.

Malacological remains at Karabi Tamchin (Mikhailesku, Chapter 19) indicate that Level II/2, III, and IV/2 deposits accumulated during relatively warm interstadial conditions. There is a possibility that Levels III and IV/2 accumulated during different interstadials, while Level II/2 accumulated under more clement conditions, transitional between Level III and modern conditions.

The large mammal taxa identified at Karabi Tamchin are typical of Late Pleistocene, Eurasian steppe biocoenoses (Burke, Chapter 16). The presence of reindeer (*Rangifer tarandus*) in all levels at Karabi Tamchin does not contradict evidence for interstadial conditions cited above. Reindeer are widespread in Crimea throughout the Late Pleistocene and are clearly adapted to mosaic environments (Markova et al. 1995).

The geological data suggest the possible existence of a weathered surface between the brecciated sediments of stratum 7c, which contains cultural Level V, and the overlying sediments. This might constitute evidence of a relatively long period between the accumulations of Level V and Level IV-A–Level IV/2. On other hand, there is no clear evidence for a long sedimentary hiatus between the accumulations of strata 6a and 6b, which contained the assemblages of Level IV/2 and Level III. The sediments containing the assemblage of Level II/2 (stratum 5) might have been deposited a long time after the accumulation of the Level III deposits.

The available chronological information for Karabi Tamchin is still poor. The AMS dates only provide minimal values and the cultural levels might be considerably older than 41,000 BP. The paleoenvironmental data, however, does provide reasonable grounds for stating that the different levels accumulated under interstadial, rather than stadial conditions. Thus, the chronology of Karabi Tamchin might be represented as follows:

Level V – Last Interglacial, or one of the Early Glacial Interstadials (Amersfoort, Brörup, Odderade);

Levels IV/2 and III – no later than the Hengelo Interstadial;

Level II/2 – no later than the Arcy (Denekamp) Interstadial.

Conclusions

Karabi Tamchin is the first known multi-level, stratified Middle Paleolithic site in the Crimean highlands. The archeological sequence includes typologically and technologically distinct assemblages belonging to the Western Crimean Mousterian and Crimean Micoquian industries.

The environment of Karabi Yaila, where plateau/steppe landscapes with a wide variety of grasses abut thickly forested valleys and ravines, was rich in both steppe and forest mammalian species. The faunal remains from the Karabi Tamchin occupations demonstrate the use of a diverse mix of prey species. Human occupants of Karabi Tamchin hunted wild ass (*Equus hydruntinus*) preferentially, while red deer, reindeer, and saiga were also exploited. The remains of other predators, including cave bear, wolf, fox, and cave hyæna, have also been identified (Burke, Chapter 16).

The Main Ridge of the Crimean Mountains receives the most precipitation of any district in Crimea. This climatic feature is responsible for much longer periods of active grass growth in the highlands, which stay fresh until late summer, when the steppes in the foothills to the north become very dry by July. Most herbivores are able to go without a source of fresh water for several days if fresh grasses are available, unless they are lactating. Seasonal migrations of steppe species onto the highland plateaux may have been connected with a search for fresh pastures at the end of summer. Karabi Yaila may have provided relatively fresh fodder through late autumn. Lithic and faunal analyses of Karabi Tamchin suggest that the site was occupied on a short-term basis only, perhaps seasonally during the late summer or fall, as a hunting camp, although there is some disagreement in the time of occupations (Burke, Chapter 16).

Karabi Tamchin provides an important archeological, geological, and paleogeographic framework for continued analyses of the Middle Paleolithic exploitation of highland regions, as well as opportunities for reconstructing past environments.