Büyük Bürüngüz Underground Shelter (Kayseri – Turkey)

Il rifugio sotterraneo di Büyük Bürüngüz (Kayseri – Turchia)

Ali Yamaç[1]

Abstract

Despite being the capital of Cappadocia during ancient times, no comprehensive scientific research has been carried out until now in terms of the rock-cut architecture in Kayseri. To fill this deficiency we, as OBRUK Cave Research Group, have started to work for the "Kayseri Underground Structures Inventory Project" in January 2014. This project, carried out based on a triple protocol with Foundation for the Protection and Promotion of the Environment and Cultural Heritage (ÇEKÜL) and Kayseri Metropolitan Municipality, includes the research, survey, mapping and documentation of all the underground structures located in Kayseri territory. This project, covering the entire province with 17,500 sq km area and ongoing for six years, has become very significant and important currently, which was not expected in the beginning, with 46 Byzantine rock-cut churches, 33 underground shelters, 3 underground aqueducts, 10 Assyrian tin mines and 2 cliff-dwelled villages explored, researched and inventoried for the first time by OBRUK Team. The most valuable part of this project carried out in various areas in Kayseri is Koramaz Valley. During our works and studies carried out in Koramaz Valley, the biggest underground shelter explored until now in Kayseri has been found. Different from the touristic well-known Derinkuyu and Kaymaklı underground shelters of Cappadocia, this underground shelter, which has not been dug as different levels and entirely continues horizontally, extends beneath the entire Büyük Bürüngüz Village like a cobweb. In this article, this long and interesting underground shelter, with a total length of 1,273 m and with 27 millstone doors, is explained.

Keywords: Koramaz Valley, Büyük Bürüngüz, Kayseri, Underground shelter.

Riassunto

Benché nei tempi antichi Kayseri sia stata la capitale della Cappadocia, sino ad oggi sulle sue architetture rupestri non è ancora stata condotta una indagine scientifica completa. Per colmare questa lacuna, da gennaio 2014, il Gruppo Ricerche Speleologiche OBRUK ha dato inizio alla realizzazione del "Kayseri Underground Structures Inventory Project". Il progetto, basato su un triplo protocollo con la "Foundation for the Protection and Promotion of the Environment and Cultural Heritage (ÇEKÜL)" e con la "Kayseri Metropolitan Municipality", prevede l'individuazione, l'esplorazione, la mappatura e la documentazione di tutte le strutture sotterranee collocate nell'area di Kayseri. Le indagini, in corso da sei anni sull'intero territorio della provincia, su una superficie di 17.500 kmq, attualmente sono risultate più consistenti e significative di quanto ci si aspettava all'inizio: infatti, dal Gruppo OBRUK sono stati per la prima volta esplorati, documentati e inventariati innumerevoli siti inediti costituiti da 46 chiese rupestri bizantine, 33 rifugi sotterranei, 3 acquedotti ipogei, 10 miniere di stagno assire, 2 villaggi a parete. Il settore più rilevante del progetto, tra le diverse zone indagate sul territorio di Kayseri, corrisponde alla valle di Koramaz. Nel corso delle nostre ricerche condotte in questa valle è stato individuato il più esteso rifugio sotterraneo sino ad oggi esplorata in Kayseri. A differenza del rifugi sotterranei di Derinkuyu e Kaymaklı, ben noti in Cappadocia e aperti al pubblico, questo insediamento ipogeo non è stato scavato su differenti livelli, ma si estende completamente in orizzontale, formando una ragnatela sotto l'intero villaggio di Büyük Bürüngüz. Nel presente articolo viene descritto questo interessante reticolo sotterraneo, lungo in totale 1.273 m e dotato di 27 porte-macine.

Parole chiave: Valle di Koramaz, Büyük Bürüngüz, Kayseri, rifugio sotterraneo.

Introduction

The different natural formations of Cappadocia and numerous rock-dwelled structures dug in these formations, especially the rock-cut Byzantine churches, both have drawn the attention of numerous travelers starting from approximately 300 years ago and have been subject to various researches and scientific works and studies. These works and studies, started for the frescoes in numerous rock-cut churches found in the

[1] OBRUK Cave Research Group; Açıkhava Apt. 16/7, Nişantaşı, Istanbul, Turkey, ayamac@gmail.com

area, have expanded to other rock-cut structures. Today, from the underground shelters to the hydraulic structures and from the dovecotes even to the rock-cut apiaries of the area, there are hundreds of different scholarly works and studies.

At this point, it will be useful to decide: though the area where all these works and studies are being carried out is named Cappadocia, nearly all investigations have been realized in Nevşehir – Ürgüp – Göreme triangle and, we note, this area is a very small part of the ancient Cappadocia. This region, mentioned in numerous historical sources since Herodotus, during the Roman and the Byzantine empires, was a province of these relevant empires. Significant changes were made in the formation of this province during both empires. For example, in Tabula Peutingeriana, the original of which dates back to 1st century AD, we can see how big the said province was. As stated by various scholars, such as W. M. Ramsay, in AD 314 Cappadocia was the largest province of the Roman Empire (Ramsay, 1890). In AD 371, the western part of this province was named *Cappadocia Prima*, with its capital being *Caesarea*, today Kayseri (Mitchell, 2018). During the Late Roman and Byzantine empires this area, known as *Cappadocia Province,* was a region with at least 50,000 sq km covering almost all Aksaray, Nevşehir and Kayseri and even a part of Kırşehir, Yozgat and Niğde provinces of Turkey of today. Despite this fact known, the touristic and scholar attraction of the rock-cut churches full of frescoes located in Nevşehir – Ürgüp – Göreme triangle, has led to the mistake of the acceptance of this very small area as the entire "Cappadocia", while Kayseri, just like in its neighbor "Touristic Cappadocia", has numerous rock-cut structures, cliff-dwellings, and underground settlements. Kayseri was named "*Mazaca*" from the Hattians to Strabo, and it was changed in "*Caesarea*" in the honor of Caesar Augustus in AD 14. During the 3rd century, it was the largest city of Central Anatolia with a population of 400,000 (Baydur, 1970).

The volcanic activity, which had started in the region approximately 10 million years ago and continued until the historical ages, has pilled pyroclastic rocks with an enormous thickness on the surface. These rocks, covering almost the entire Kayseri region, are mostly porous like tuff and ignimbrite. Both the elevations on the north of Kayseri and wide plateau on the south of Kayseri are completely covered by these volcanic rock deposits. The amount of pyroclastic deposits shows significant differences regionally and is known to reach a thickness of 400 m in the north of Kayseri. Though it is hard to believe that these eruptions continued until the historical ages, as a result of a radiometric age determination carried out recently, it is understood that the activity of the main caldera of Erciyes Mountain continued until 150,000 to 200,000 years ago; after this period, the caldera blocked and its activities after the blockage continued until 2,000 years ago from the lateral cracks (Alici Sen *et al.*, 2004).

When the volcanic rock covering the entire area was first started to be dug, and when the inhabitants started to use the underground as their dwellings, is unknown. The continuous usage of the rock-hewn structures for thousands of years has made such an archaeological exploration impossible. The earliest dated rock-hewn structures encountered in Cappadocia are probably the rock-cut graves. There are Roman tombs carved in rocks in Nevşehir / Mazıköy and south of Kayseri, and especially Ayşepınar and Yeniköy. On the other hand, numerous other Roman rock-cut graves close to the settlements have been changed in the time in accordance with different purposes. From the Roman to Byzantine empires, the variety of the underground and rock-cut structures was incredible. The structures carved in the rocks of the area are not limited only to houses, barns, dovecotes, graves, and churches; there are also monasteries, shelters, aqueducts, cisterns, and even apiaries, and these rock-cut structures observed in different parts of Kayseri have been continuously used until today.

Koramaz Valley

There is an elevation difference of 700-800 m between the plain where Kayseri is located and mountains located 30 km east of this plain; consequently each creek flowing down these slopes has formed its valley by eroding the soft pyroclastic rocks. East of Kayseri there are six different basins eroded by these streams flowing down from the high hills; in the rock sides of these valleys there are structures carved by the inhabitants dwelling in the area for hundreds, or even more for thousands of years. The biggest of these six basins is Koramaz Valley (fig. 1). In this 16 km long valley there are in total seven different villages. From west to east, these are Büyük Bürüngüz, Üskübü, Küçük Bürüngüz, Ağırnas, Dimitre, Vekse, and Isbıdın. Both the interior and surrounding of these seven villages, located on the slopes of Koramaz Valley, are full of structures carved in rocks. Though it is very hard to date these structures due to their continuous usage, the experts have dated some of the rock-cut churches in the valley to the 10th and 11th centuries. On the other hand, it is a generally accepted assumption that the underground shelters on Koramaz Valley have been dug between the 7th and 10th centuries by the Christians living in the region as a protection against the Arab raids. Beyond all these, the experts examining the rock-cut structures near Ağırnas have stated that, though these structures have changed over time due to different usages, by taking into consideration the entrance decoration and interior architecture, the first purpose of excavating some structures can be attributed to Roman graves. To sum up, it is possible to say that the background of all these structures carved in rocks on Koramaz Valley dates back to at least 2,000 years ago and probably to even older times (Yamaç, 2017; Yamaç, in press).

In total 476 different rock-cut structures have been researched and surveyed by our team until today in

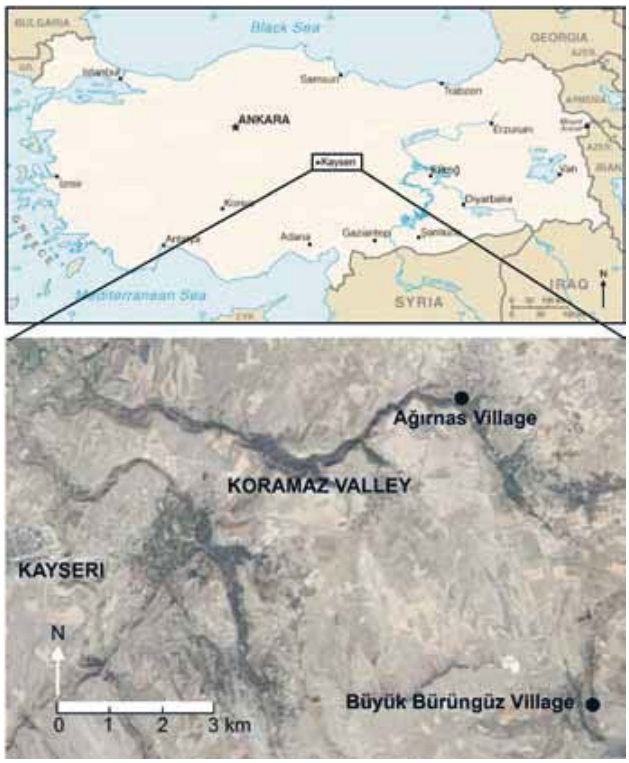

Fig. 1 – Location map showing Kayseri, Koramaz Valley and Büyük Bürüngüz Village (Google Maps and Google Earth).

Fig. 1 – Mappa con la localizzazione di Kayseri, Valle di Koramaz e villaggio di Büyük Bürüngüz (Google Maps e Google Earth).

Koramaz Valley and there are 42 rock-cut churches and 11 underground shelters among these structures. Though most of the other rock-cut structures surveyed were houses, dovecotes, and barns, it is considered that at least 18 of the cavities on the valley have been dug as Roman rock-cut graves and 16 as *Columbarium* (Gilli, 2017, Yazlik, 2019). Koramaz Valley is the only known example in Kayseri area containing this number of rock-cut structures with such a rich historical background.

Büyük Bürüngüz Underground Shelter

Büyük Bürüngüz Village, 22 km east of Kayseri, located at the starting point of Koramaz Valley and on the slopes of İvriz Mountain (1858 m a.s.l.), has always been the biggest settlement of the valley (fig. 2). According to the Ottoman registrations belonging to AD 1500, there were 99 houses in the village (Inbaşi, 1993). Different from the other six villages in Koramaz Valley, there is no cliff settlement around Büyük Bürüngüz. During our works carried out on the basin, as a result of our visits to this village, we have been informed about the existence of an underground shelter accessible from the gardens of the houses. We note that there are defensive structures similar to this in various settlements of Cappadocia. These singular structures, dug beneath the houses, have been connected as a result of the growth of the village and formed a defence network extending beneath the entire inhabited area. Derinkuyu and Kaymaklı underground shelters,

Fig. 2 – Büyük Bürüngüz Village from west towards east. On the background İvriz Mountain (1858 m a.s.l.) can be seen (photo B. Yazlık).

Fig. 2 – Villaggio di Büyük Bürüngüz, vista da ovest verso est. Sullo sfondo si staglia il monte İvriz (1858 m s.l.m.) (foto B. Yazlık).

Fig. 3 – Cavers in the small streets of Büyük Bürüngüz Village (photo A.E. Keskin).
Fig. 3 – Speleologi in una stradina del villaggio di Büyük Bürüngüz (foto A.E. Keskin).

located 70 km southeast of Kayseri, have been formed as a result of the connection of individual defence systems devoloped on several underneath storeys (Bixio, 2012). Likewise, beneath Ağırnas Village, located six km northwest of Büyük Bürüngüz Village, there is an enormous underground shelter extending beneath the entire village (Yamaç and Tok, 2015).

During our Kayseri works and studies carried out for years, we have previously explored and surveyed numerous underground shelters. Some of these were small defence structures. On the other hand, as a strange contradiction, the other underground shelters which are big and impressive in terms of the architecture such as Doğanlı, Fatinler, and Kuşcağız were far away from all settlements (Yamaç and Tok, 2016). And it was not possible to research properly the underground shelter beneath Ağırnas because the parts beneath the houses were continued to be used

Fig. 4 – Storage rooms after the entrance of the first underground shelter (photo A.E. Keskin).
Fig. 4 – Magazzino presso l'ingresso [1] del primo rifugio sotterraneo (foto A.E. Keskin).

as warehouses – storages and the connection tunnels were closed to prevent passing.
Our Büyük Bürüngüz Underground Shelter adventure started at the storage room beneath the yard of the first house that had opened its doors to us (fig. 3). This structure (first underground shelter), the entrance of which (entrance [1]) started with a stone masonry tunnel, continues with eight consecutive storages and the floors of most chambers are partially full of debris falling from the ceiling. The millstone door on the floor of the second chamber is nonfunctional. Likewise, the tunnel on the north wall of the third chamber ends after 16 m (fig. 4). The main underground shelter starts after the eight storage. Interestingly, the millstone door of the first chamber in the underground shelter is defending towards the continuation of the tunnel. Probably, the chambers currently appearing as storage rooms, at the entrance should have been expanded after the previous defence structure and turned into a warehouse. The second chamber had a bidirectional defence, both towards the entrance and continuation of the tunnel, with a double millstone door: this device is currently out of place but its "operations room" is apparent. The defence towards the inner passages proves the interconnection of the tunnels with the other houses (fig. 5). This second chamber mentioned should be a redoubt, i.e. a "last defence room", defending against the enemies that might come from both directions. The redoubts, frequently encountered in Cappadocian underground shelters, are almost always the last chamber. On the other hand, the occurrence of this chamber right at the beginning of a tunnel in this underground shelter encountered for the first time. Another tunnel continuing towards east from this chamber, after another "operations room" without a millstone door, reaches an underground storage with a barrel roof, frequently encountered in the area, and opens to the surface beneath another house (entrance [3]). There are two blocked side tunnels in this east branch (fig. 6). The main tunnel continuing towards the southeast, after two side branches, reaches another millstone door defending towards the entrance. The last part of the underground shelter, due to the net-like tunnels, most of which are blocked with excavations, completely looks like a maze. Though from time to time these types of tunnels are dug to confuse the enemies, without opening the blocked galleries it is not possible to understand its reality. On the other hand, the defence of at least three millstone doors towards the continuation of the tunnel even in this last part shows us that the underground shelter continues after this last point and might lead to the opinion that there are different entrances from the south side of the structure (fig. 7, fig. 8 and fig. 9).

Fig. 5 – Towards the second part of the first underground shelter, with small chambers (photo A.E. Keskin).
Fig. 5 – Piccoli vani sul percorso verso la seconda parte del primo rifugio sotterraneo (foto A.E. Keskin).

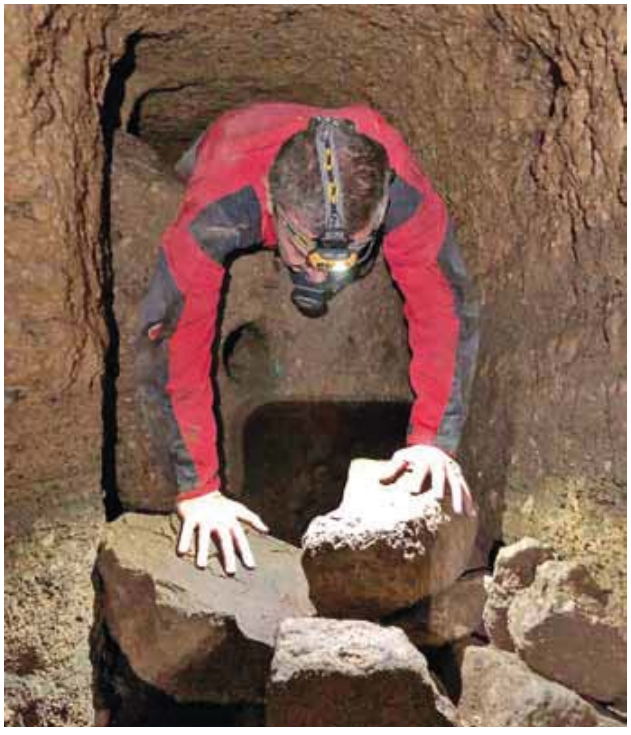

Fig. 6 – Some tunnels were blocked by debris and broken millstones and really difficult to pass (photo A.E. Keskin).
Fig. 6 – Alcuni cunicoli, occlusi da detriti e frammenti di macine, risultano molto difficoltosi da percorrere (foto A.E. Keskin).

After this first research carried out in Büyük Bürüngüz Village, the door of another house was opened and we went underground once again from another yard. The entrance [2] of this second underground shelter is close to the first structure studied and similar to it: in fact it starts with underground storage rooms as well. Despite the solid structure of the first basement went down by stairs, there are severe ceiling collapses in the second, third and fourth warehouses. At this part, the floor of the upper house is partially collapsing. The underground shelter tunnel starts in the south of the last warehouse which is relatively solid. The width of this tunnel continuing for 41 m is steadily 65 cm. The first millstone door encountered in the tunnel defends towards the entrance. The side tunnel, continuing towards east four metres after this millstone door, is blocked after another millstone door. Two more millstone doors are protecting the entrances in the quadruple chamber system reached by the main tunnel. After the last chamber, there is another room, with an "operations room" which defends towards the continuation of the tunnel. The tunnel, continuing towards the southeast from this point, is blocked after three small chambers. The other tunnel continuing towards west from the same chamber is 54 m (fig. 10) and the room, almost in the middle of the tunnel and on the side branch towards the east, is protected with double millstone doors defending both towards the entrance and exit. The other millstone door in the last chamber of the tunnel, protecting the chamber towards the

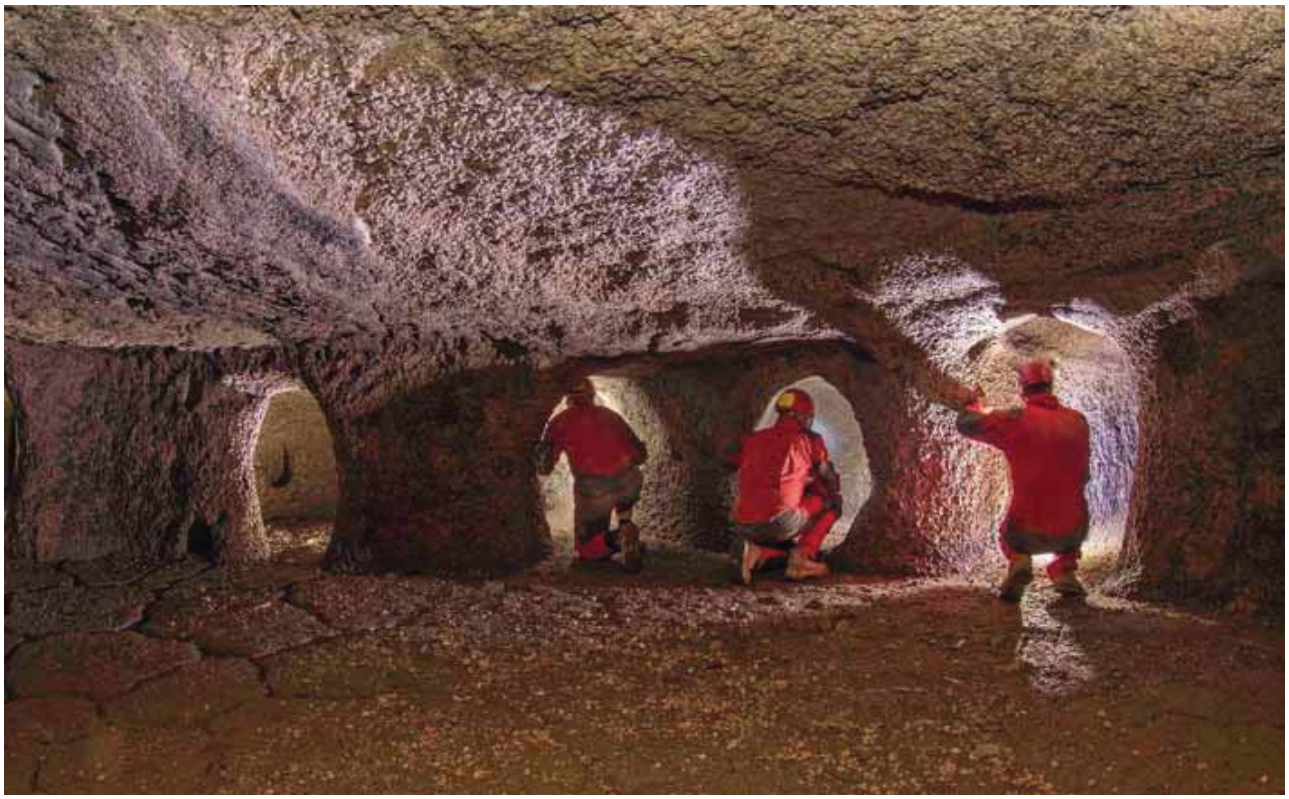

Fig. 7 – The chamber in the middle of the first underground shelter with several small rooms (photo A.E. Keskin).
Fig. 7 – Camera nel centro del primo rifugio sotterraneo su cui si affacciano diversi piccoli vani (foto A.E. Keskin).

Fig. 8 – Surveying the tunnel after one of the last millstones towards the end of the first underground shelter (photo B. Yazlık).
Fig. 8 – Esecuzione del rilievo topografico del cunicolo dopo una delle ultime macine all'estremità del primo rifugio sotterraneo (foto B. Yazlık).

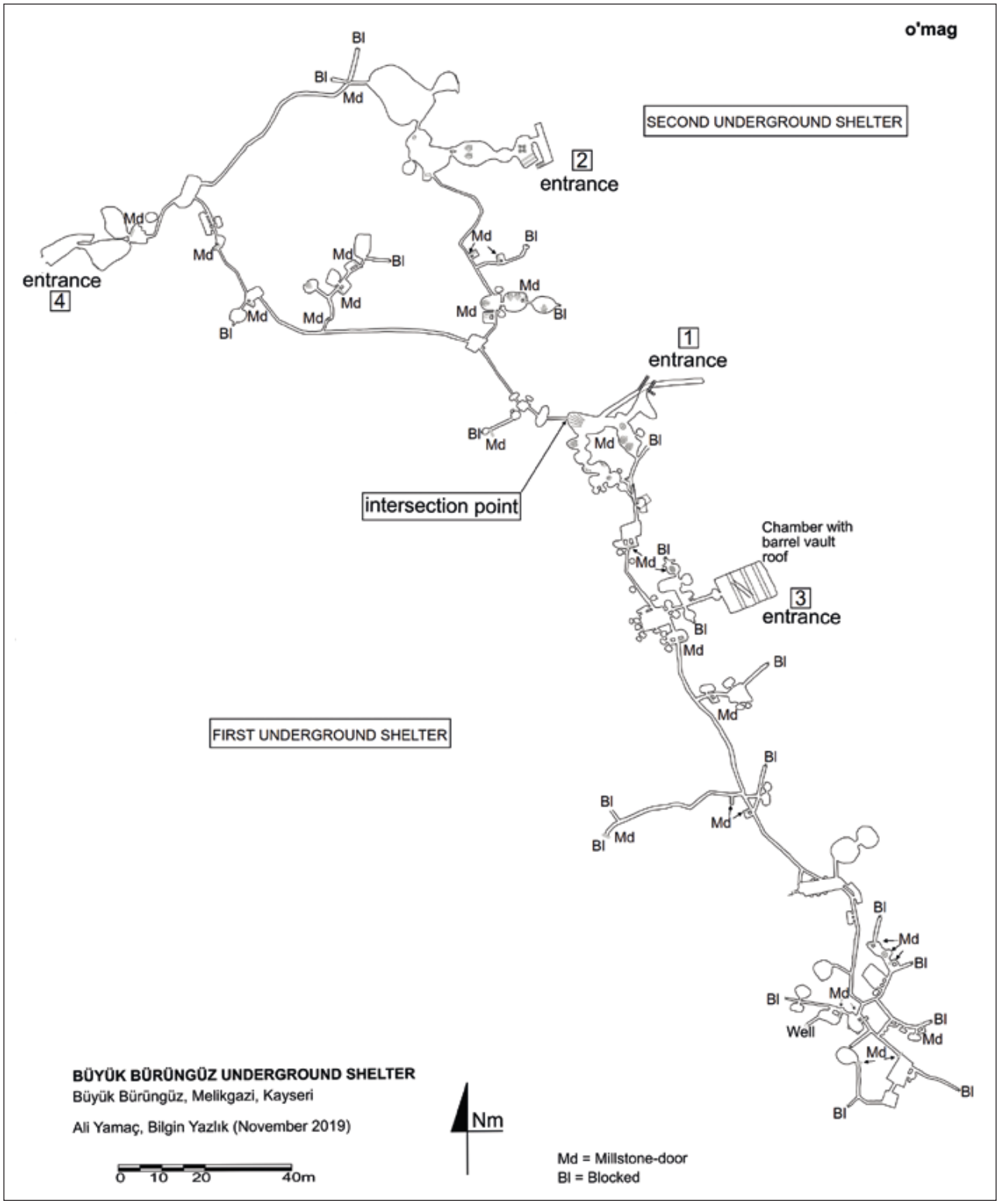

Fig. 9 – Plan of Büyük Bürüngüz Underground Shelter (drawing A. Yamaç, B. Yazlık).

Fig. 9 – Pianta del Rifugio Sotterraneo di Büyük Bürüngüz (grafica A. Yamaç, B. Yazlık).

west tunnel, is the biggest we have encountered until now in entire Kayseri area, with a diameter of 1.85 m and thickness of 40 cm. The interesting thing is that, just like other various millstone doors in these two underground shelters, this millstone door has been carved from a rock different from that of the structure. Both underground shelters have been entirely dug in a porous ignimbrite containing large volcanic rock pieces. However, the rocks of some millstone doors in the structure are harder and nonporous. The tun-

Fig. 10 – A tunnel in the second underground shelter (photo A.E. Keskin).

Fig. 10 – Una delle gallerie del secondo rifugio sotterraneo (foto A.E. Keskin).

nel turning towards the north in the continuation of the chamber protected with this huge millstone door is closed 18 m further by another millstone door. A branch turning west in the continuation of the tunnel is opened to the surface after four big storages (entrance [4]). However, the main tunnel, without any chamber and side tunnel, continues towards the east for another 44 m and, after making a very big circle, connects to the chamber at the entrance of this underground shelter (fig. 11, fig. 12, fig. 13, fig. 14).

Fig. 11 – Surveying a side branch in the second underground shelter (photo A.E. Keskin).
Fig. 11 – Rilievo topografico di un settore laterale del secondo rifugio sotterraneo (foto A.E. Keskin).

Fig. 12 – Most tunnels of second underground shelter are tighter than the first one (photo A.E. Keskin).
Fig. 12 – La maggior parte dei cunicoli del secondo rifugio sotterraneo sono più angusti di quelli del primo (foto A.E. Keskin).

Fig. 13 – A small chamber in the second underground shelter (photo A.E. Keskin).

Fig. 13 – Piccolo vano nel secondo rifugio sotterraneo (foto A.E. Keskin)

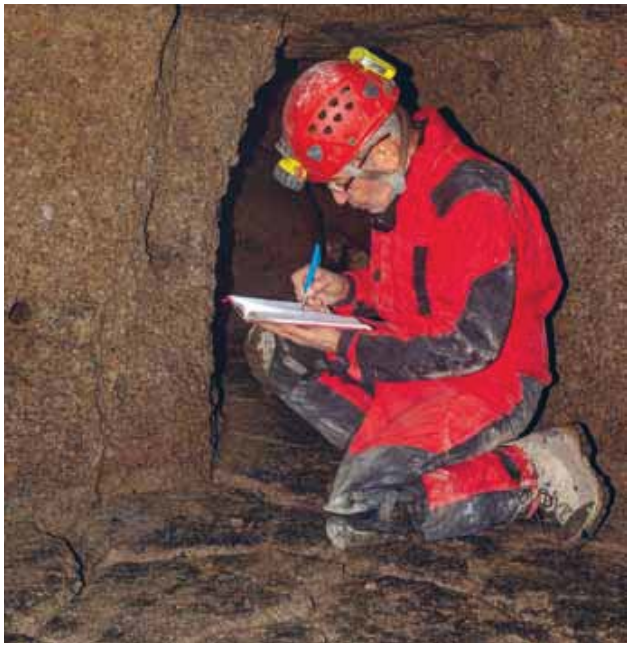

Fig. 14 – Surveying another small chamber in the second underground shelter. Floor is covered with dried mud due to leaking water (photo A.E. Keskin).

Fig. 14 – Rilievo di un altro piccolo vano nel secondo rifugi sotterraneo. Il pavimento è ricoperto da fango secco dovuto a infiltrazioni d'acqua (foto A.E. Keskin).

As a result, we had surveyed and mapped two different underground shelters beneath Büyük Bürüngüz Village. The first one was 701 m and the second one was 572 m. Apart from the entrances used during our surveys, we had found two more points opening to the surface. Therefore, we have four different GPS coordinates. When we located the map coordinates to Google Earth, we had realized that these two underground shelters intersect at a point. When we investigated these intersection points on-site, we realized that they were blocked with debris in both underground shelters. First, we started to dug and open the pile of soil in the first structure and after a while, we reached a gap. Afterward, we went into the other structure and found the same gap and connected these two underground shelters. Thus, the total length of this underground defence system reached 1,273 m. This is the longest underground shelter measured until now in Kayseri area, and 27 millstone doors determined in total in this defence structure is another record. On the other hand, we are aware that the underground network measured and mapped until now covers a small part of Büyük Bürüngüz Village; 23 different blocked tunnels prove that probably extends beneath the entire village. With the opening of the blocked tunnels or explorations of different entrances, there is the certainty that Büyük Bürüngüz Underground Shelter will be much more longer than its current length.

Acknowledgement

We've been working together for more than six years and during this period "Kayseri Underground Structures Inventory Project" reached an unbelievable level. It would be impossible without his dedicated attitude and extraordinary efforts. So, it is a pleasure to express our sincere gratitude to Prof. Osman Özsoy, Kayseri Coordinator of ÇEKÜL Foundation.

References

Alici Sen P., Temel A. & Gourgaurd A., 2004, Petrogenetic modelling of Quaternary post-collisional volcanism: A case study of central and eastern Anatolia. *Geological Magazine,* 141**,** pp. 81-98.

Baydur N., 1970, *Kültepe (Kaneš) ve Kayseri Tarihi Üzerine Araştırmala.* Istanbul Universitesi Edebiyat Fakültesi, Istanbul.

Bixio R., 2012, *Cappadocia: Schede dei siti sotterranei / Records of the underground sites.* British Archaological Records No. 2413. Archaeopress, Oxford.

Gilli E., 2017, From columbaria to dovecotes: two thousand years of use of cave dwellings in Ağırnas (Kayseri, Turkey). Proceedings Congress *HYPOGEA 2017.* Urgup, pp. 446-453.

Inbaşi M., 1993, *16. Yüzyıl Başlarında Kayseri* (*Kayseri by the Beginning of 16th Century*). Kayseri.

Mitchell S., 2018, Cappadocia. *In* Nicholson O. (ed.), *The Oxford Dictionary of Late Antiquity.* Oxford University Press, Oxford, pp. 290-291

Ramsay W., 1890, *The Historical Geography of Asia Minor.* John Murray, London.

Yamaç A., 2017, Underground Settlements and Cave Dwellings of Agirnas Village, Kayseri (Southeast Turkey). Proceedings Congress *HYPOGEA 2017.* Urgup, pp. 306-310.

Yamaç A., in press, Cliff Dwellings of Koramaz Valley (Kayseri – Turkey). *4. MESS Symposium 2018,* Antalya.

Yamaç A. & Tok E., 2015, An Architect's Underground Shelter. *Opera Ipogea 1/2015.* Società Speleologica Italiana, Bologna, pp. 37-46.

Yamaç A. & Tok E., 2016, Doganli Underground Shelter (Capadocia – Turkey). *Opera Ipogea 2/2016.* Società Speleologica Italiana, Bologna, pp. 61-66.

Yazlik B., 2019, Koramaz Vadisi Columbarium Mezarları. *Turkish Studies,* 14**,** pp. 669-733.