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Araştırma/Research

A New Prehistoric Settlement near Heraclea Pontica on the Western Black Sea Coast, İnönü Cave

[BATI KARADENİZ KIYISINDA, HERACLEA PONTİKA YAKINLARINDA YENİ BİR PREHİSTORİK YERLEŞİM, İNÖNÜ MAĞARASI]

Hamza EKMEN– F. Gülden EKMEN - Ali GÜNEY - Benjamin S. ARBUCKLE –

Gökhan MUSTAFAOĞLU – Cemal TUNOĞLU - Caner DİKER – Ercan OKTAN

Anahtar Kelimeler

Batı Karadeniz Arkeolojisi, Mağara Yerleşimi, Erken Tunç Çağı, Hitit Silahları, Balkan Göçleri.

Keywords

Western Black Sea Archaeology, Cave Settlement, Early Bronze Age, Hittite Weapons, Balkan Migrations

ÖZET

Anadolu'nun Batı Karadeniz kıyılarını arkeolojik araştırmalar açısından uzun yıllarıdır ihmal edilmiştir. Bölgede yürütülen arkeolojik çalışmaların büyük bir bölümü yüzey araştırmalarından oluşmaktadır. Kastamonu'nun Devrekani ilçesi yakınlarındaki Kınık yerleşiminde yürütülen çalışmalar ve Karadeniz (Kdz.) Ereğli'nin Karadeniz kıyısına yakın bir noktasında bulunan Yassıkaya'da 2000 yılında gerçekleştirilen tek sezonluk kazı, bölgenin tarihöncesi kültürlerinin anlaşılmasına yönelik veri sağlayan kazılar olma özelliklerini uzun yıllar korumuşlardır. 2017 yılında başlayan ve devam etmekte olan İnönü Mağarası kazıları ile birlikte bölgede tabakaya bağlı buluntu elde edilen yerleşimlere bir yenisi eklenmiştir. Bu nedenle, Yassıkaya ve İnönü Mağarası kazıları bölge arkeolojisi açısından önemli bir yere sahiptir. İnönü Mağarası kazıları aynı zamanda Zonguldak ilinde yürütülen ilk çok tabakalı yerleşim yeri kazısıdır. Söz konusu mağarada gerçekleştirilen kazılarda ulaşılan veriler, Batı Karadeniz kıyılarının tarihöncesi kültürler açısından son derece zengin ve özgün bir yapıya sahip olduğuna dair kanıtlar sunmuştur. Arkeolojik bulgular yanında farklı tabakalara ait radyokarbon tarihleri, bölgenin mutlak kronolojisin oluşturulması konusunda nerdeyse ilk verileri oluşturmaktadır. Beş ayrı kültür katmanı tespit edilen İnönü Mağarası'nda gerçekleştirilen kazılarda Kalkolitik Çağ'dan başlayarak aralıklarla Ortaçağ'a kadar uzanan bulgularla karşılaşılmıştır. Farklı uzmanlık alanları tarafından incelenen bu bulgular üzerinde yapılan çalışmalar, bölgenin kültürel gelişimine ve bölgeler arası ilişkilerine ışık tutmaktadır. Bu çalışmada İnönü Mağarası kazılarından elde edilen ilk sonuçların bir sentezi sunulacaktır.

ABSTRACT

The western Black Sea coast of Anatolia has been neglected in terms of archaeological research for many years. Most of the archaeological studies conducted in the region consist of surface surveys. The studies carried out in Kınık settlement near Devrekani district of Kastamonu, and the single-season excavation conducted in 2000 in Yassıkaya located in Karadeniz Ereğli, close to the Black Sea coast, are two rare examples of excavation providing data for understanding the prehistoric cultures of the region. Excavations at a new site in the region, İnönü Cave, began in 2017 and provide important new information concerning the history of settlements in the region. The work at İnönü Cave represents the first excavation of a multicomponent settlement conducted in Zonguldak province. The data obtained from the excavations are providing evidence for the rich and unique prehistoric cultures of the western Black Sea coast. In addition to archaeological finds, radiocarbon dates allow us to establish the absolute chronology of the region. Excavations conducted in the cave have identified five cultural levels extending from the Chalcolithic to the Middle Ages. The analysis of the finds from these cultural levels including ceramics, small finds, metals, lithics, and faunal remains are examined to shed light on the cultural development of the region and its interaction with neighboring regions. In this study, a synthesis of the first results obtained from the excavations at İnönü Cave are presented.

Introduction

The data obtained from Heraclea Pontica and its territory survey (HPTS) located in Karadeniz (Kdz.) Ereğli district by the Zonguldak-Bülent Ecevit University, Department of Archeology in 2016, provided valuable data on the rich culture of the Western Black Sea Region in prehistoric times. The HPTS survey provided evidence for the prehistoric occupation of this coastal region including the use of rock shelters, caves and also the slopes of valleys which generally flow in the south-north direction. It was also observed that archaeological sites, which have not been intensively investigated and are located in hard-to-reach places, were heavily exposed to illegal excavation activities, and some caves and rock shelters were used as livestock shelters. İnönü Cave, which is located in the southwest of Alacabük Village of Kdz. Ereğli district and approximately 25 km inland from the coast (Fig. 1), is one of the caves visited within the scope of the HPTS project where prehistoric remains were recovered in abundance. The archaeological remains in the cave were significantly damaged due to its long use as a livestock pen and illegal excavations. As a result, we initiated a scientific excavation project in 2017 in order to halt destruction and to investigate this promising site.

Regional Information

Geographical Data

The Western Black Sea region, located in Northwest Anatolia, extends from the Kızılırmak delta to the Sakarya River. In regard of the geographical and cultural description of the region, the Black Sea forms the northern border whereas the Black Sea coast of Bulgaria sets the western border.[1] The southern border is marked by mountain ranges covered with lush forests extend like a natural embankment in four rows running parallel to the coastline; these mountains are the Küre Mountains, Bolu and Ilgaz Mountains, and Köroğlu Mountains in the southernmost, respectively. Furthermore, the Akçakoca Mountains, a small mountain range, also extend on the south of the Zonguldak-Ereğli line. These mountains, with average altitudes of 2000-2500 m, prevent the humid air of the coastal region from penetrating to the interior. Thus significant differences exist in terms of climate and vegetation between the coasts and inner parts of the region. Accordingly, there were also some corresponding differences in lifestyle and settlement models in the past, as today.

Archaeological data show that similarities between the Black Sea region and the cultures of Central Anatolia increase when moving from the coast towards the interior. The coastal cultures seem to have a very different development from the Central Anatolian cultures.[2] In this regard, it is possible to say that the coastal and inner cultures of the region were developed through very different dynamics. Nevertheless, the limited cultural interactions between the coastal and interior regions likely took place via valley systems. The Gökırmak river, the western tributary of Kızılırmak, enables the cultures of the Central Black Sea to reach the inner parts of Kastamonu. The Araç/Ilgaz River enables the connection of Kastamonu province with Central Anatolia. In the west, the Filyos River provides a natural connection for the coastal cultures to reach the interior. Gülüç, though a small river, provides the connection of Devrek and its surroundings with the coast.

The Kelçe, Kızlar and İn streams merge with the Gülüç Stream in a short distance between Çaylıoğlu and Ovaköy.[3] The accumulation of fluvial sediments formed by these streams provides important advantages to the region in terms of agriculture and animal husbandry activities. İnönü Cave, which is located in a dominant position on this favorable area, consists of three interconnected chambers called A, B and C. The width of the cave, the mouth of which faces west, reaches approximately 25 meters in its inner section, and its height reaches 10 meters (Fig. 2). Even the extreme points of the cave, which has a wide mouth, remain well lit from sunrise to sunset. The location, scale and orientation of İnönü Cave make it a favorable location for human occupation.

Archaeological Research

The research history of the studies on the prehistoric cultures of the Western Black Sea Region, most of which were expeditions and surveys, dates back to approximately 80 years ago. The

1 Özdoğan M. 1993: 173.

2 Aydıngün et. al. 2013: 5-6.

3 Ekinci 2011: 83 ff.

study conducted by R. O. Arık in Bolu province at the beginning of the 1940s is one of the first archaeological studies in the region. This expedition yielded the pottery which was associated with the Troy I-II period.[4] Subsequent work by İ. K. Kökten in Kastamonu province, did not reveal much additional information on the prehistoric periods of the region.[5] Two Acheulean tools found by E. Y. Bostancı, in the course his study in the Kastamonu-Gökırmak Valley, provided evidence for the Paleolithic Period.[6] Furthermore, the studies between Kastamonu and Eskişehir provinces conducted by C. A. Burney, showed the existence of finds with a wide date range from the Chalcolithic Age to the Iron Age.[7] Research made by P. Donceel-Voûte in the region confirmed the presence of the Early Bronze Age.[8] In 1990, Hittite metal vases were accidentally found during the construction of the dam near Kınık Village in the vicinity of Kastamonu-Devrekani which prompted excavations revealing a slope settlement dating from the end of the 4th millennium BC to the beginning of the 1st millennium BC.[9] In the Paphlagonia survey project carried out by R. Matthews between 1997-2001, the region between Çankırı and the east of Karabük was investigated.[10] Finally, another survey conducted by A. Özdoğan and C. Marro in Kastamonu province; demonstrated finds extending back to the Chalcolithic period.[11]

Most of the abovementioned prehistoric studies were concentrated in Bolu, Kastamonu and Karabük provinces, which are located far from the Western Black Sea Region. Considering the potential of the region regarding the connections between the Anatolian, Thracian and Balkan cultures by land and sea, it is surprising that the Western Black Sea Region has not been subject to intensive archaeological investigations. A limited number of studies conducted in the area from the west of Kdz. Ereğli[12] coast to the Thracian coast however provided initial information concerning the prehistoric occupation and raised important questions.

In the studies of M. Özdoğan et al. on the Kocaeli Peninsula and the Black Sea coastline at the beginning of the 1980s, no pottery giving information about prehistoric times was found. M. Özdoğan stated that the absence of the Early Bronze Age settlements along the Marmara coast of Thrace east of Istanbul and the fact that neither Thracian nor Anatolian cultures belonging to other periods were found were quite surprising considering the geographical location of the region and its suitable environment.[13] Likewise, the recent studies of M. Ortaç[14] and N. Ayengin[15] in the inner parts and coastal regions of Bolu and Düzce provinces emphasized that there is scarcely any finding from prehistoric periods. On the other hand, it was remarkable that in surface surveys conducted by M. Kartal[16] in Sakarya province, which borders the west of the region, no pottery of the early period was found. These investigations reveal that there is an important gap regarding the prehistoric times when pottery was used in the region from the east of İstanbul to the Black Sea coast of Sakarya. The surface survey made by G. Karauğuz in Zonguldak province, Devrek district and its vicinity are important for the recognition of the coastal cultures of the region.[17] Settlements extending from the Chalcolithic to the 2nd millennium BC were recorded in this study.[18] Moreover, the surface surveys conducted by B. Düring et al. in Kastamonu-Cide, Şenpazar also provided important information about the prehistoric cultures of the region. The results of this study were published in detail, and are also important as they include calibrated radiocarbon dates.[19] As stated above, the settlements and find areas containing the Chalcolithic, the Early Bronze Age and the Iron Age were also found in the HPTS intensive surveys made in the Gülüç stream valley within the borders of Kdz. Ereğli district in 2016.[20]

4 Arık 1944: 345.

5 Kökten 1948: 224-225.

6 Bostancı 1952: 137-142.

7 Burney 1956: 179.

8 Naumann et. al. 1979: 196-197.

9 Çınaroğlu 1991; Genç 2005: 49-50.

10 Matthews and Glatz 2009: 51.

11 Marro and et. al. 1998: 317.

12 Baysal 2016.

13 Özdoğan M. 1985: 410.

14 Ortaç 2018: 143.

15 Ayengin 2018: 274.

16 Kartal et. al. 2016: 401.

17 Karauğuz and During 2009: 153.

18 Karauğuz 2016: 22-24.

19 During and Glatz 2015.

20 Ekmen F. G.: 2017.

Considering the excavations conducted in the region, it is remarkable that their number is quite low. The excavation in Kocagöz Höyük[21] conducted in 1951 in Sinop province, which forms the eastern border of the region, and then the excavation in Kovuklukaya[22] conducted in 2002 provided clues about the Chalcolithic, Early Bronze Age and Middle Bronze Age. Information on the Chalcolithic, Early Bronze Age and Hittite period was also obtained from the Kastamonu-Kınık excavations.[23] The excavation in Yassıkaya directed by T. Efe in 2000 has become a turning point for the archaeology of the region after providing the first stratigraphic sample of material culture found on the coast.[24] The excavations in İnönü Cave that started in 2017 and continue under the auspices of the Kdz. Ereğli Museum and under the direction of Dr. Hamza Ekmen demonstrated that, the region was settled periodically in the period from the middle of the 5th millennium BC to the Middle Ages (Tab. 1, Fig. 5). Furthermore, the radiocarbon dates of the settlement provide valuable data for establishing an absolute chronology for the prehistory in the region.

İnönü Cave

Geological Formation

İnönü Cave is situated within the complex geology of the Pontic Mountains. The volcanic structures formed in the Pontic Mountains were first described by Ketin and Gümüş[25] and identified as a remnant of arc magmatism. Northward subduction of northern Neo-Tethys ocean produced magma due to partial melting and migration of this magmatic body to the surface forming a typical volcanic arc.[26] Several researchers[27] defined the volcanism of western Pontids as Turonian-Coniacian lower magmatic succession (Dereköy Formation) and Campanian upper magmatic succession (Kökyol, Unaz, Cambu Formations). İnönü Cave is located in the volcanic Cambu formation (Fig. 3A). In the study area, we determined the volcanic lavas flowed on the fine graded sandstone and pelagic limestone. Today, the cave is located on the edge of a lava flow which covers a large area. Its structure is from a large room and connected to two small tubes. The cave's ceiling exhibits polygonal contraction cracks (Fig. 3B) typically forming after the flow of the lava stopped.[28] Formation of contraction crack sand columnar-shape joints are typical examples of lava (cooling). One side of the cave is collapsed. It could be the consequence of internal lava pressure or related to the erosion that formed the adjacent valley. Columnar joint marks are visible on the edge of the cave enterance. Within the cave, one of lava tubes has an observable lava lining structure with stalactites present on the ceiling at the end of the tube wall (Fig. 3D).

The current form of İnönü Cave developed in several steps (Fig. 4). First, sheet lava flowed over sedimentary units and made a bake zone over this surface. The cooling lava sheet formed a thick crust and columnar joints occurred as a result of heatloss. Melt inside the flow was still hot and accumulated in a room-likespace. Afterwards, lava in the room drained with the rupture of the thick crustor branching of one the connected passages. Usually in subaqueous volcanic formations, drained lava rooms collapse due to hydrostatic pressure.[29] The ends of the passages were sealed by lava. The cave has subsequently been tilted by tectonic effects of the branch of North Anatolian Fault (NAF) and formed its current position in the period from the Late Miocene to the Holocene. Surrounding the cave, there is not any indication for submarine lava flows as pillow lava. However, volcanic rocks extend in a huge area from cave location to the city of Kzd. Ereğli and previous studies have recorded formation of pillow lavas in this area. All these indicators show that this volcanic cave could be one of the feeder centers within this volcanic region.

In order to obtain detailed information, we collected nine rock samples from different parts of the cave walls. There are two group of characteristic volcanic rocks according to examination made under polarized microscope. The first group of rock samples contains dominantly plagioclase (Plj) phenocryst and small amounts of

21 Erzen 1956.

22 Dönmez 2004: 34.

23 Genç 2008.

24 Efe and Mercan 2002: 361-362.

25 Ketin and Gümüş 1963.

26 Peccerillo and Taylor 1975; Manetti et. al. 1979; Şengör and Yılmaz 1981; Tüysüz 1999.

27 Şahintürk and Özçelik 1983, Tüysüz 1999; Tüysüz et. al. 2012.

28 Yamagishi 1985.

29 Sánchez et. al. 2012.

pyroxene (Pr) and sanidine. The texture of the rocks is porphyritic and glomeroporphyritic consisting of Pr minerals. The second rock group contains plagioclase (Plj), pyroxene (Pr), biotite (Bio) and small portion of quartz and the texture is porphyritic texture with Plj phenocryts and microliths. Pl phenocrystals also have sieve texture. Keskin and Tüysüz[30] have also made similar observations on rock samples in the same region and they analysed the lava samples as basaltic andesite according to their result of the ICP-OES and ICP-MS. In order to obtain more detailed geochemical classification and comparison, volcanic samples should be analysed.

Stratigraphy

In trench H/7 in the chamber C, which is located in the eastern part of İnönü Cave, the bedrock was reached as a result of the excavations carried out between 2017-2018. It was observed that the bedrock of the cave, which was also found in some sections of trenches İ/7 and J/8, had a sloping structure in the east-west direction, in other words, from the back of the cave towards the mouth. Cultural deposits measuring approximately 1.20 - 1.40 m were observed in the eastern section of trench H/7. However, when the sloping structure of the cave floor is considered, it is currently impossible to say whether the thickness of the deposits in different areas has the same dimensions. Five cultural levels were determined in the area where the bedrock was reached (Tab. 1). The findings deriving from different cultural levels were comparatively evaluated, and the relative chronology obtained in this way was supported with the C14 samples taken from each level (Fig.5).

Level I: Middle Ages

A small number of green, yellow and brown glazed pottery (Fig. 6A) along with plain wheel-made pottery was found just below the layer of animal manure covering the top level of the cave. It is observed that there are intertwined rings on the glazed pottery, which includes plates, bowl forms, and sometimes, decorations with wave patterns made by the sgraffito technique between these rings. Monochrome glazed pottery is present in shades of brown or green as is multicolored glazed pottery combining shades of dark brown, turquoise and green (Fig. 6A). Similar types of glazed pottery have been found during the excavations at Samsat[31], Ahlat[32], Tarsus[33], Bergama[34], Sinop Balatlar Church[35] and Demre St. Nicholas Church.[36] Glazed pottery with similar features as also held as individual and collective finds in museum collections.[37] This type of pottery is dated to the Middle Ages, especially produced with the sgraffito technique, were commonly used in Anatolia and surrounding areas during the 11-13th century AD.

Apart from the pottery, another important find for dating Level I is a copper coin belonging to the 'Anonymous Follis Group' and dating to the Byzantine period (Fig.6B). The damaged coin has a bust of Christ on the front face and a Latin cross on the back face. This coin belongs to the Anonymous Follis Group I and should be dated to the period of the Byzantine Emperor Nikephoros III. It is known that these coins were minted in Constantinople between 1078-1081 AD (1075-1080 in some sources), although they likely remained in circulation somewhat longer. The above-mentioned finds provide important information for the dating of Level I to the 11-13th centuries AD. no architectural remain were found in this level.

Level II: Early Iron Age

Level II, which is located just below Level I, represents the Early Iron Age. Here, simple stone architectural remains and a votive pit were found in trenches İ/7 and H/7 (Fig. 7). Pottery and small finds were recorded in these trenches in large quantities.[38] The votive pit, adjacent to the north wall of the cave, is remarkable. It is surrounded by stones placed vertically in a semi circle shape and abundant pottery and animal bones were found inside the pit. Most of the pottery was decorated by the finger impression technique on an incision or relief band. Furthermore, a miniature vase, many complete and fragmented spindle whorls

30 Keskin and Tüysüz 2017.

31 Bulut 1996.

32 Karamağaralı 2007.

33 Doğer 2000.

34 Böhlendorf-Arslan 2004.

35 İnanan 2012.

36 Fındık 2013.

37 Polat 2019; Doğer 1999.

38 Ekmen et. al. 2019: 276-277.

made of clay, loom weights, pieces of necklace and bone tools were also found on the floor of the pit. The diversity and density of the finds suggest intentional deposition and that the pit may be related to rituals associated with fertility.[39] Similar pits dated to the Early Iron Age were found in Thrace and in the Marmara region at Menekşe Çatağı[40] and Aşağı Pınar.[41] Here it was suggested that the decorated pottery uncovered in pits was deliberately deposited and related to ritual practices. The pits that were found during surface surveys in Istanbul were formed by carving into the bedrock and are described as the "cult well/votive pit."[42] Such votive pits are known form numerous examples in Bulgaria from the beginning of the Iron Age.[43] When the characteristics of the finds obtained in the pit found in İnönü Cave and especially the decorated pottery, it can be said that a similar tradition was present here during the Early Iron Age.[44]

The fact that spindle whorls (Fig. 8A), loom weights and clay spoons are common among the small finds in Level II indicates that the group who settled in the cave during the Early Iron Age was intensely engaged in weaving activities. Some spindle whorls are decorated with incisions and impressions applied to the top portion (Fig. 8B). Among the forms of spindle whorls, those with flattened spherical, cylindrical, symmetrical or asymmetrical biconical form are frequently documented. In particular, the samples with a biconical form and a grooved middle part (Fig. 8C) are among the typical forms of this period.[45] The counterparts of these kinds of spindle whorls made of clay are known from Level VIIb of Troy.[46] Loom weights are round, pyramidal with a flat body and rounded corners. Similar forms were found at levels VIIa[47] and VIIb[48] of Troy.

In regards to ceramics, incised vessels (Fig. 10) along with so-called Barbarian ware/Coarse ware (Fig. 9) and Handmade Lustrous wares (Knobbed ware/Buckelkeramik) were recovered from Level II. These ware types have also be found in the Early Iron Age building levels in Thrace, South Marmara, and the Turkish Aegean coast.[49] Among the group known as "Coarse ware" sherds with finger or nail impression decoration are common (Fig.9). It is observed that the finger or nail impressed decoration, which is generally applied on a strip band, is placed directly on the surface of the vase in some cases and on the surface of the vase to form a horizontal, vertical, or wavy line on the other samples.[50] Occasionally, finger impressed decorations made directly on the vase and the relief strip band by the impression technique are observed together. Similar samples made with this decorative technique were found in the course of the surface surveys in Troy VIIb1,[51] Maydos-Kilisetepe,[52] Adatepe,[53] Gordion,[54] Boğazköy[55] and around west coast of Istanbul.[56] The incised pottery group found at this level is a group with zigzags or bands surrounding the vase[57] (Fig.10). Similar samples of this group were found another sites dating to the Early Iron Age[58] including Level VIIb2 of Troy, where they are known as "Knobbed Ware".[59] It appears that the pottery in this group has a thinner wall and better paste compared to the pottery of the Coarse ware group. Furthermore, the pottery in this group is mostly represented by forms such as bowls and deep bowls.

The results of the radiocarbon analysis of Level II cluster between 12-11th centuries BC (Fig.5). Therefore, the combination of small finds, ceramic parallels and radiocarbon dates show that level II dates to a relatively narrow span at the beginning of the Early Iron Age.

39 Ekmen et. al. 2020: 45.

40 Erim-Özdoğan 2003: 222-23.

41 Özdoğan M. 2000: 72-73.

42 Aydıngün and Aydıngün 2013: 73-74.

43 Özdoğan 2000a: 72-73.

44 Ekmen et. al. 2020: 45.

45 Ekmen et. al. 2020: 45-46, Fig. 9.

46 Blegen et. al. 1958a: 257, 37.676, 37.683, 37.280, 37.305, 37.60.

47 Blegen et. al. 1958a: 221, 37.289.

48 Blegen et. al. 1958a: 256, 37.153, 37.287.

49 Aydıngün and Aydıngün 2013; Dönmez 2006; Dönmez 2017.

50 Ekmen et. al. 2020: 46.

51 Blegen et. al. 1958a: 281

52 Sazcı 2012: Res. 4.

53 Ökse et. al. 2019: 25-26, Res. 8.

54 Gunter 1991: Pl. 32/B.

55 Genz 2000:Abb. 11.

56 Aydıngün and Aydıngün 2013: Res. 1, 3; Aydıngün 2017: 384, Resim 5.

57 Ekmen et. al. 2020: 46.

58 Gunter 1991: Pl. 32/C-D.

59 Blegen et. al: 1958b, 143.

Level III: Late Bronze Age

One of the important results of the excavations at İnönü Cave regards the acquisition of data indicating that the cave was inhabited in the Late Bronze Age. Two wooden floors belonging to Level III were found just below the remains of level II. While most of the floor remains, marked as structures A and B, are located in trenches İ/7 and İ/8, some are located in trenches H/7 and H/8 as well (Fig.11). Structure A which extends in a northwest-southeast direction was destroyed by the stones surrounding the votive pit belonging to Level II. It was determined that thicker planks were used on the external lines of the floors, and they were connected to each other using interlocking lap joints known as the çantı technique. The thinner planks in the inner part were placed in the form of a grid making a floor. It is thought that wooden piles driven between the inner planks were used to fix the beams and that a thin clay filling under them was laid on the leveled ground before the wooden floors were built. The wood of both structures is well preserved and belongs to the genus Quercus (oak).[60]

A small number of pottery and bone fragments and a substantial number of metal items, stone axes and whetstones were found on the floors of these wooden structures. Among the well-preserved metal finds there are a socketted spearhead, dagger, toggle pin, knife, fragment of a lugged axe (?), earring, ring, pins with rolled head, and sewing pins (Fig. 12).

These finds were analysed by P-XRF, and the results show that they were made of bronze. Typological comparisons of the bronze objects suggest that there are possible counterparts for these finds within the metal working repertoire of the Late Bronze Age. Weapons are particularly important for comparative chronology. The direct comparisons for the dagger found on the wooden floor of structure A were found in building D in Ortaköy/Şapinuva, which is dated to the 14th century. A socketted spearhead with a broken and bent tip was found in structure B. There is a ring on the handle of the spearhead that is used to attach the handle to the wooden handle. There is a crescent-shaped groove decoration in three parallel rows on the spearhead's shoulders. The spearheads, of which the first examples were found in the graves of levels III and IV at Kültepe-Kaniş Karum, are shown as an innovation in the Anatolian weapon repertoire of the 2nd Millennium BC.[61] There are cases indicating that this type of weapon, which was used throughout the Late Bronze Age[62], was also used in Anatolia in the Early-Middle Iron Age.[63] The spearhead and molds found in the Zagora region and Ada Tepe also suggest that the same weapon type existed in the Balkans between the Late Bronze Age and Early Iron Age.[64]

Comparisons for the metal weapons found on the wooden floors from İnönü Cave indicate that the latter can be dated in the Late Bronze Age. The radiocarbon analysis of the wood taken from the floors demonstrated the period between the 15-13th centuries BC (Fig.5). No traces of the 2nd millennium BC were found in the course of previous studies in the region.[65] Therefore, the finds of Level III at İnönü Cave are important as they make the first secure data on the Late Bronze Age of the region. The fact that the counterparts of the metals found at level III were found in Hittite centers brought to mind the question of whether the communities living in this cave were related to the Kaskians or Pala Tummana.

Level IV: Early Bronze Age

There is a hiatus represented by a thickness of approximately 30 cm under Level III in trench H/7. Below this hiatus, cultural deposits representing Level IV were found. In this level, uneven stones and a wooden pillar were found in the south of the trench. To the east of the wooden pillar there is a clay-plastered floor. These simple architectural remains indicate the presence of basic living areas inside the cave during the Level IV occupation.

Level IV pottery includes fragments of lined and beak spouted pitchers, usually in shades of red, and pottery with finger impressed decoration under the rim. In addition, fragments of loop handles connected to the body with a handle (Fig. 13)

60 Merev, N. 2003; Schoch et. al. 2004; Schweingruber et. al. 2011.

61 Yıldırım 2011: 120.

62 Dedeoğlu and Abay 2014: fig. 32/13.

63 Yalçıklı 1999: 53-54.

64 Alexandrov et. al. 2018: cat. no. 315, 340, 379, 380, 398, 542.

65 Karauğuz 2016: 23-24.

were found with exact parallels at Yassıkaya, a nearby cave settlement inhabited during the Early Bronze Age.[66] These unique vessels with loop handles connected to the body with a handle and which have a knob placed to make them easier to hold,[67] are known only from level IV at İnönü Cave and Yassıkaya Cave. Moreover, pottery with finger impressions under the rim are known from Yassıkaya as well as the Early Bronze Age settlements[68] in Çankırı-Yazıboy[69], Koyunbaba[70] and Kanlıgeçit[71] in Thrace. Furthermore, it is remarkable that the relief band decoration increasingly became widespread in the Early Bronze Age II in Ikiztepe and at the beginning of the Early Bronze Age III in the Eskişehir region.[72] The knobs around the handles of the beak-spouted pitchers found in this level (Fig.13) can be considered as imitations of the rivets of metal objects of the same form. Similar applications are also known from the samples found in Yassıkaya[73] and Kastamonu-Kınık[74] settlements. Finally, black pottery with a simple rim, referred to as "Blacktopped ware" in the literature, constitutes a group that is important for dating Level IV.[75] T. Efe emphasized that the black topped bowls found at Yassıkaya should be dated to the 3rd millennium BC, based on parallels with examples from Central Western Anatolia and around Ankara.[76] The black topped ware found at level IV in İnönü Cave constitutes a second group found within the Western Black Sea region.

Ceramic vessels with potential use in the dairy production were found among fragments of mud brick in trench H/7.[77] The analysis of the carbon sample taken from Level IV dates back to approximately 2300-2100 BC (Fig.5).

66 Efe and Mercan 2002: 366.

67 Efe and Mercan 2002: 363, Çiz. 4/7-8.

68 Sherds with the same paste characteristics but without decoration were found in Sazlıdere, Istanbul. Detailed information: Aydıngün and Aydıngün 2020: 13.

69 Matthews 2009: Figs. 3.19, 3.21.

70 Heyd et. al. 2014: Fig. 8.7.

71 Özdoğan and Parzinger 2012: 104-105.

72 Efe and Mercan 2002: 363.

73 Efe 2004: Fig. 15-16.

74 Genç 2005: Çiz. 153.

75 Sarı 2007: 647.

76 Efe and Mercan 2002: 365.

77 Ekmen H. 2020: 79, Fig. 4.

Level V: Chalcolithic

Level V, which represents the oldest occupation of the cave is located directly on the floor of the cave. It was formed by filling and leveling the bedrock with pebbles and stones and a gray-clay mortar. Stratigraphically, it follows a rubble filled hiatus below level IV, in which the red-lined pottery belonging to Level IV take over to dark-colored burnished pottery characteristic for the Chalcolithic period.

Although there are scarcely any architectural remains in this level, the ceramic corpus has proven useful for dating. The most common group of ceramics come in shades of grayish-black, black, dark gray or dark brown and are usually very well burnished (Fig.14A). Although there are many similar examples belonging to the Chalcolithic, there are discussions about when and where the pottery with this type of dark paste first appeared.[78] The specimens from the Neolithic-Chalcolithic transition are known from Gökçeada-Uğurlu[79], and examples from the Middle Chalcolithic Period are known from Gülpınar, Kumtepe, Beşik-Sivritepe, Limantepe VIIb and Yeşilova II.[80] Ceramic studies suggest that the red-lined pottery of the Neolithic Period roughly disappeared after 5600-5500 BC and that the use of dark-burnished pottery became more widespread afterwards.[81] AşağıPınar, Aktopraklık B, Ilıpınar VB and Uğurlu III in Northwestern Anatolia are some of the settlements showing that the use of dark-burnished pottery became widespread.[82]

Our evidence from İnönü Cave indicates that the use of dark-burnished pottery was maintained on the Western Black Sea coast during the last quarter of the 5th millennium BC. A second group of ceramics important for dating Level V is characterized by burnished/polished decoration (Fig.14B). The counterparts of this tradition can be observed at the Late Neolithic and the Early Chalcolithic sites in Thrace[83], in the Aegean[84]

78 Brami and Heyd 2011: 179; Çevik 2018: 1049.

79 Erdoğu 2018: 763.

80 Erdoğu and Çevik 2015: 38.

81 Erdoğu 2018: 761-762; Erdoğu and Çevik 2019: 3; Özdoğan E. 2015: 50.

82 Erdoğu and Çevik 2019: 3-7.

83 Erdoğu and Çevik 2015: 37-38.

84 Günel 2014: 89, Pl. 2A.

and Marmara regions.[85] This pottery tradition is also a characteristic for the Kocadermen-Gumelnita-Karanovo VI (KGK VI) culture dated between 4500/4400 - 4100/3800 BC in northeastern Bulgaria and the Muntenia region.[86] Vessel forms including carinated pottery and long-necked pottery with a biconical provide additional evidence for dating Level V. The counterparts of carinated pottery are known from settlements in Western Anatolia, Thrace, and the Southern Marmara regions.[87] Pierced lugs observed on the bowls provide additional information on dating. Pierced lugs denote a tradition observed in Western Anatolia and the Lakes District since the Neolithic Period.[88] Examples of pierced lugs dating to the Chalcolithic were found[89] at Ulucak III, Ege Gübre 2, Yeşilova II[90], Baklatepe, Limantepe VII, Ilıpınar[91] and Hocaçeşme.[92]

Amongst the small finds of level , two clay idols (Fig. 15) attract attention. They represent an abstract image of a standing woman. These figurines are depicted in a highly stylized manner and do not clearly show anatomical details such as a waist or neck or a chin protrusion on their faces.[93] The parallels for these types of idols are found in Thrace, Aşağı Pınar level 7[94] and Gülpınar[95] and are dating to the Chalcolithic. In İkiztepe on the Black Sea coast,[96] there are similar examples dated to the Late Chalcolithic. Furthermore, an idol head found in Gălăbnik in the Struma Valley[97] and some idols found in Vincă[98] could be compared with the objects from İnönü Cave.

A remarkable group of finds, which have great importance for dating, was found in trench J/8 in the east of the Chamber C. This finding includes more than ten thousand beads made from a variety of different materials found in situ in a small ceramic cup (Fig.16). Amongst the group of beads, approximately ten thousand two hundred were produced from steatite, ninety-three were made of carnelian, twenty-seven of gold, one of them was produced from electrum and one of radiolarite. Direct parallels for the gold beads can be found in the settlements and cemeteries in the Chalcolithic Balkans. The Varna I Cemetery, located on the Black Sea coast of Bulgaria, is famous for its many gold artifacts.[99] The gold beads of the Varna I Cemetery dating between 4600-4200 BC[100] are the exact equivalents of gold beads from İnönü Cave regarding their typology and production techniques. Apart from the Varna Cemetery, similar gold beads were also found in the Durankulak Cemetery[101] and the Yunatsite Mound[102] belonging to the second half of the 5th millennium BC. Seven radiocarbon analyses on organic materials including animal teeth and antler taken from this level (Fig. 5) show the results which cluster tightly around the last quarter of the 5th millennium BC confirming the date of Level V occupation.

Animal Remains

The first exploratory analysis of the rich fauna assemblage from İnönü Cave took place in 2019. In this initial examination of the fauna, a total of 1627 specimens selected from deposits representing the Chalcolithic, Early and Late Bronze Age and Iron Age occupations of the cave were recorded (Tab.2). Although sample sizes for individual occupations are small, they provide a valuable first glimpse into the animal economies of the Western Black Sea coast, a region with very little zooarchaeological coverage.

Overall, the faunal remains are remarkably well preserved with little evidence for postdepositional taphonomic processes. As a result, 64% of specimens were identified to taxonomic group (i.e, family, genus, species). Fragmentation of the assemblage is moderate with 54% of specimens

85 Çayır-Böyükulusoy 2014: 22, Map 1.

86 Boyadziev 1995: 179, Özdoğan M. 2000b: 78.

87 Özdoğan et. al. 1991: Fig. 22; Parzinger 2005: Fig.85-87, 116; Efe 2001: Fig. 16; Schoop 2005: Taf. 149; Derin 2011: Fig. 7; Caymaz 2013: 41-54.

88 Duru 2008: Res. 114, 115, 117.

89 Caymaz 2013: 41-54.

90 Derin 2011: Fig: 7-16.

91 Thissen 2008: 8.

92 Özdoğan M. 2013: Fig: 73-86.

93 Ekmen, F. G. 2020: 62-63, Figs. 5-6.

94 Özdoğan M. 2013: 187.

95 Takaoğlu and Özdemir 2018: Fig. 49. 11.

96 Bilgi 2012: 146, Res. 316-318.

97 Pavúk and Čochadžiev 1984: 195 ff.

98 Tasič 2011: Fig.3, Fig.10.

99 Ivanov 1975: 1 ff.

100 Ivanov and Avramova 2000: 12.

101 Todorova 2002: 62, Pl. 107

102 Matsanova and Mishina 2018: 299.

representing less than a quarter of a complete element (average specimen size = 5.3cm). However, 28% of specimens represent mostly complete elements (75-100% complete). This is rather high and suggests that the rate of intentional breakage for within bone nutrients was relatively low and that postdepositional fragmentation was also low. Carnivore gnawing is present at very low frequencies (<0.1% of specimens) suggesting that dogs did not regularly occupy the cave (no remains of dogs were identified in the assemblage).

The assemblage is dominated by the remains of mammals although small numbers of tortoise, fish, bird, and crab remains were also identified (Tab. 2). Among the mammalian remains, interestingly, suids are the most abundant (36% of the specimens identified to genus) followed by the caprines (goats and sheep at 21%), deer (19%) and cattle (17%). The suid remains include both large and small bodied individuals which likely represent both wild boar (Sus scrofa) and domestic pigs (Sus domesticus). Ongoing biometric and ancient DNA work should further elucidate the nature of these two divergent phenotypes. Among the caprine remains, no wild phenotypes were identified, suggesting that domestic goats and sheep were herded but not hunted. The remains of goats (Capra hircus) outnumber those of sheep (Ovis aries) at a ratio of 15:1, indicating that goats were a focal point of this diverse regional pastoral economy likely reflecting the rugged and rocky terrain around the cave.

In addition to suids, cattle remains also exhibit two morphotypes: one large and one small. Based on preliminary analysis of the biometric characteristics it is likely that the smaller bovines represent domestic cattle (Bos taurus) while the very large individuals represent aurochs (Bos primigenius) hunted in the adjacent valleys. A small individual recovered from an Iron Age context exhibits a typical traction pathology suggesting that domestic cattle were used to pull heavy loads.[103] Deer are abundant in the assemblage in all periods and are represented by approximately equal numbers of roe deer (Capreolus capreolus) and red deer (Cervus elaphus). Given the large body size of red deer and the general abundance of deer remains at the site, it is likely that venison represented a significant part of the diet of the inhabitants of İnönü Cave.

Finally, carnivores are represented in small numbers by fur bearing taxa including Brown bear (Ursus arctos), marten (Martes foina), wild cat (Felis silvestris orchaus), lynx (Lynx lynx), leopard (Panthera pardus) andfox (Vulpes vulpes). Cutmarks indicating skinning were observed on there mains of fox, marten, bear, and leopard suggesting that the pelts of these animals were utilized.

The frequencies of the dominant taxa identified in the stratigraphic sequence at İnönü Cave represent a combination of long-term continuity in cultural preferences combined with an animal economy strongly adapted to the rugged terrain and forested environment of the Pontic region. Despite chronological coverage extending from the Middle Chalcolithic to the Iron Age, the representation of the primary mammalian taxa at İnönü Cave is relatively stable over time (Fig. 17). Pigs are well represented in every period, peaking in the Late Bronze Age layers at 50% of the specimens identified to genus. Goats peak in the Early Bronze Age levels (29%) but are never the dominant taxon. The frequency of cattle is also remarkably consistent although it declines in the Iron Age when pig herding and deer hunting are the dominant economic activities represented in the faunal assemblage. Deer are an important wild resource through time indicating that they remained a consistently available resource in this forested environment. However, both deer taxa decline in the Late Bronze Age perhaps suggesting that swine herding displaced hunting as an economic activity at that time.

The economic system evident at İnönü Cave emphasizing the herding of pigs and secondarily cattle and goats combined with hunting deer as well as boar and aurochs is unique for later Holocene Turkey. Zooarchaeological data for this region are rare with the closest parallels coming from the Late Chalcolithic and Early Bronze levels at Ikiztepe (near Samsun), Çamlıbel Tarlası (North central Anatolia), and Kırklareli-Kanlıgeçit (Turkish Thrace) where pigs and cattle dominate and caprines are a tertiary resource.[104] This cluster of sites along the Black Sea coast and extending into north central Anatolia suggest a distinctive animal economy common to this region perhaps linked to the ‘Kaska’ or ‘Pala-Tummana’

103 Bartosiewicz et. al. 1993.

104 Bartosiewicz et. al. 2013; Tekkaya and Payne 1988.

people documented in Hittite texts.[105] Continued work on the faunal remains from İnönü Cave will further explore this unique faunal province, its adaptations to this rich but challenging environment, and its change over time.

Stone Assemblages

A small assemblage of 57 chipped stone artefacts was found in the İnönü Cave settlement during the 2017-2019 excavation seasons. The most abundant chipped stone artefacts consist of retouched and non-retouched blades used on blade blanks, blade knifes and various forms of points (arrowheads). Considering the entire group of chipped stone finds, this is a blade-dominant industry. Retouched and unretouched blades and blade knives compose the majority of the artefacts (Fig. 18) although one end scraper was identified (Fig. 19). The small quantity of the finds recovered so far is not sufficient to conduct detailed techno-typological and statistical studies. Hence, technologically, it is impossible to provide an overview of all stages of the reduction sequences due to a lack of cores, plunging blades, primary blanks, and production debris. The presence of tools without the presence of any debitage, indicates that the knapping was carried out elsewhere outside the cave, and only the tools were transported to the cave and / or used within the cave. Another point is that the samples showed proof that the tools were produced skilfully, which indicates that a formal chipped stone tradition was associated with the inhabitants of the settlement of İnönü Cave. The presence of fragments of blades apparently broken after use appears to prove this idea.

It is appears that blades, which characterize the chipped stone industry of the cave, are made by direct and indirect percussion technique using soft hammering. Structural deterioration has been observed indicating that all 11 blades recovered in trench H/7, level IV (Early Bronze Age) were heavily exposed to fire. These blades are all made using dark flint raw material and all are intensely retouched. There are fractures in the distal and proximal parts as a result of the use of the tools (Fig. 20). Considering that the levels they were found are characterized by a burned and ashy structure, it is not yet clear whether the blades were thrown into the fire place after losing their functionality or placed in the fireplace for symbolic purposes. Sedimentary disruptions caused by heavy water movement in the cave make it impossible to understand their original depositionary positions. It can be noted that the interpretations can be clarified if other finds like this blade group are detected. No traces of silica polish were identified on any of the blades indicating that they were not used as sickle blades. Abrasions resulting from retouching on the lateral parts of blades suggest that they may have been used in butchery and cutting / stripping activities. Similar samples encountered in İnönü Cave and specifically those specimens with intense retouching around the blade blanks are also known from regions with earlier stone chipping traditions. These types of retouches were carried out throughout the Chalcolithic and Bronze Age, especially in the Thrace region, where there are similar examples from Hoca Çeşme and Aşağı Pınar.[106] Intensely retouched macro blades are also known from the Bulgarian Azmak Late Chalcolithic levels and the cultural regions of Karanovo V-VIII.[107]

The presence of "point" shaped tools is remarkable. These finds, which include four pieces in total, are triangular. Their lengths are between 4 and 5,6 cm with widths between 2 and 4 cm. Points are made of dark grey chert and bear flake scars produced by soft hammer on both sides. No pressure flaking techniques were used in the produce of the points. The tip of one specimen is broken and the other three are intact. Three points are recovered from trench H/7, Level V. The incomplete example was recovered from trench J/8, also in level V. Concerning their form and technological features, it is possible to evaluate these points as "arrowheads" (Fig. 21).

Points with similar forms, made by using good quality flint (and not chert) are also known from the Balkans, from the northern regions of the Black Sea, as well as from the Istanbul-Marmara region.[108]A point made of white flintstone similar in form to those found at İnönü Cave was published by Özdoğan from Bronze Age Ağaçlı

105 Bryce 2005.

106 Özdoğan M. 2013; Gatsov 2009; Gatsov and Nedelcheva 2011.

107 Gatsov 2009: 22; Gatsov and Nedelcheva 2014.

108 Özdoğan M. 2006: 21-28; Özdoğan.2013; Gurova 2004.

Kumluğu[109] (Fig. 22A: it is the white arrowhead in the bottom left corner of the figure). Arrowheads made of flint or obsidian are not encountered in the Near East, Aegean or Anatolian chipped stone assemblages, although their use continued after the Early Chalcolithic in the northern Balkans and Pontic steppes.[110] Although arrowheads are found in many places including western Turkey, the Aegean, and the Balkans, there are very few detailed studies about them. Numerous arrowheads are known from the Early Bronze Age settlements of Bulgaria, especially Kazanlik and Dikili Tash in Greek Thrace.[111] Therefore, these finds from the İnönü Cave are important in terms of revealing the cultural relationship between the Western Black Sea and the Balkans in prehistory.

In particular, the arrowheads from İnönü Cave show similar characteristics with the Chalcolithic point forms from the Gumelnița-Karanovo culture of the Balkans (Fig. 22B-D).[112] In addition to the specific information given in this text, in general terms, many evaluations have been made on the cultural relations between the Balkans and the geography including the Northwest Anatolia and Marmara regions, especially from the Epipaleolithic to the Bronze Age.[113]

In recent times, İnönü Cave was used as an animal shelter, and the natural spring water resources inside the cave were used as well, which resulted in some physical disturbances of the cave by local shepherds. This may have affected deposits negatively including the small chipped stone assemblage.[114] Nevertheless, continued excavations in the cave in future years will likely increase the chipped stone sample which will allow more precise techno-typological interpretations and conclusions on this industry.

Conclusion

The first results obtained from the excavations carried out between 2017-2019 at İnönü Cave have had a significant impact on our understanding of the prehistoric cultural sequence of the Western Black Sea coast, which has been poorly explored previously. The excavations at Yassıkaya provided the first data on the archaeological cultures of the region's coastline during the Early Bronze Age II-III period. Now, with the excavations at İnönü Cave, we have a deeper understanding of the Early Bronze Age of the region, as well as valuable evidence for the Late Chalcolithic, Late Bronze Age, Early Iron Age and Middle Ages in the area. The İnönü Cave findings are important to establish the absolute chronology of the cultural history of the Western Black Sea coastline, which is extending from the Late Chalcolithic to the Middle Ages, and for determining its cultural and economic relations with other regions.

Although no architectural remains were found in Level V, the dark-faced burnished pottery and the samples with polished decoration and white matt decoration from this level are significant for dating the Chalcolithic occupation and shedding light on relations between regions. More than ten thousand beads from this level, found in a votive cup, represent an important find regarding their quantity and quality of production. Based on the radiocarbon dating of a tooth also included in this cup, along with the dates obtained by the analogical evaluation of the other finds of this level, it is understood that the gold beads are the oldest known gold ornaments in Anatolia. Steatite and carnelian beads, which are among the other raw materials, draw attention with their numbers and workmanship that require expertise, and they provide information on understanding the bead production techniques during the Chalcolithic. The chipped stone finds in Level V include flintstone, which is thought to be locally sourced, and blades, arrowheads and scrapers made of chert. We suggest that these cutting tools were associated with hunting. The examinations on animal bones at Level V suggest that although pigs, cattle and goats were herded deer and fur bearing carnivores were also intensively hunted.

The limited area exposed in Level IV is dated to the Early Bronze Age and provide traces of small scale household production.The vessels associated with processing milk, worked antler, chert blades, many of which were burnt, suggest small scale household activities. At the contemporary Yassıkaya settlement, T. Efe argued that the lack of architectural remains, furnaces and hearths

109 Özdoğan M. 2016: 19.

110 Özdoğan and Parzinger 2012: 232-233; Kotova 2008.

111 Özdoğan and Parzinger 2012: 232-236.

112 Torcică 2018: 203-208; Sirakova and Zlateva-Uzunova 2012: 37.

113 Bailey 2000; Gatsov and Efe 2005; Efe 2004; Özdoğan M. 1998; Özdoğan M. 2003; Özdoğan M. 2014.

114 Ekmen et. al. 2019.

could be explained by the fact that this settlement was a temporary campsite.[115] Similarly, at İnönü Cave, it is possible that the cave was used as a workshop area in the Early Bronze Age, perhaps used at certain times of the year for the simple production of specific materials. The fact that only a small part of the cave was inhabited at this level, the low density of ceramic sherds and the absence of small finds such as figurines support this view. Direct comparisons for the ceramics, which are usually red-lined, handmade and bearing relief band decoration, are known from Yassıkaya. T. Efe indicated that this pottery, which was first identified with the excavations in Yassıkaya, spread roughly in the area from the east of Akçakoca to the west of Çankırı, while this culture, which contains local elements, was defined as the "Filyos Culture". The pottery in level IV of İnönü Cave proposes that a new settlement of the Filyos Culture was found.

One of the most interesting and exciting results of the excavations in İnönü Cave was the acquisition of data indicating that the cave was inhabited in the Late Bronze Age (building level III). Numerous metal items found in and around the wooden floor structure belonging to this period are well preserved. The P-XRF results show that these finds were all made of bronze. When similar examples of the bronzes are examined, it appears that they are closely associated with the Late Bronze Age. The fact that the bronze weapons found on the wooden floors are the weapon types of the 2nd millennium BC and that their counterparts were found in important Hittite cities brought to mind the question of whether the finds are related to the Kaska or Pala Tummana people, who are frequently mentioned in the Hittite texts.

In addition to the simple stone architectural remains at Level II, dated to the Early Iron Age, a pit surrounded by flat stones in a position adjacent to the cave wall was also unearthed. The finds within the pit and the examples in other contemporary settlements indicate that the pit found at Level II in İnönü Cave represents a "votive pit". The comparisons for of the pottery from the votive pit including incised pottery, Barbarian ware/Coarse ware, and Handmade Lustrous ware (Knobbed ware/Buckelkeramik) are known from the Early Iron Age building levels of settlements in Thrace, South Marmara, and the Aegean coast. The parallels of symmetrical or asymmetrical spindle whorls with a biconical form and a grooved middle part found across the İnönü Cave Level II and specifically in the votive pit are also observed at level VIIb of Troy. Although the above-mentioned pottery of level II is generally associated with peoples migrating from the Aegean/Balkan at the end of the Late Bronze Age, more data is needed to associate Level II of İnönü Cave with these migrations sevurely.

Based on the sgraffito pottery found at Level I and the coin dated to the period of the Byzantine Emperor Nikephoros III, we discovered that the cave was last used in the Middle Ages before the recent Alacabük Village shepherds used the cave as a livestock pen.

Based on the archaeological findings presented above, it is apparent that İnönü Cave was inhabited periodically, starting from the middle of the 5th millennium BC until the Middle Ages. The archaeological discoveries made through the scientific excavation of the cave are exceedingly important for providing the evidence about the prehistoric coastal cultures of the Western Black Sea, which were previously only poorly known.

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115 Efe and Mercan 2002: 364.

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HAMZA EKMEN

Orcid ID:0000-0002-3452-2494

Zonguldak-Bülent Ecevit Üniversitesi, Arkeoloji Bölümü, Zonguldak/TURKEY.

hamzaekmen@hotmail.com

F. GÜLDEN EKMEN

Orcid ID: 0000-0002-6818-9431

Zonguldak-Bülent Ecevit Üniversitesi, Arkeoloji Bölümü, Zonguldak/TURKEY.

ekmengulden@gmail.com

ALİ GÜNEY

Orcid ID: 0000-0003-3617-7628

Zonguldak-Bülent Ecevit Üniversitesi, Arkeoloji Bölümü, Zonguldak/TURKEY.

aliguney@gmail.com

BENJAMIN S. ARBUCKLE

Orcid ID: 0000-0002-5445-5516

University of North Carolina at Chapel Hill, Anthropology Department,UNITED STATES

bsarbu@email.unc.edu

GÖKHAN MUSTAFAOĞLU

Orcid ID: 0000-0002-9726-172X

Ankara-Hacı Bayram Veli Üniversitesi, Arkeoloji Bölümü, Ankara/TURKEY.

gokm72@yahoo.ca

CEMAL TUNOĞLU

Orcid ID: 0000-0002-9654-3522

Hacettepe Üniversitesi, Jeoloji Mühendisliği Bölümü, Ankara/TURKEY.

tunay@hacettepe.edu.tr

CANER DİKER

Orcid ID: 0000-0002-9733-0633

Hacettepe Üniversitesi, Jeoloji Mühendisliği Bölümü, Ankara/TURKEY.

cdiker@hacettepe.edu.tr

ERCAN OKTAN

Orcid ID: 0000-0001-6136-8392

Karadeniz Teknik Üniversitesi, Orman Mühendisliği Bölümü, Trabzon/TURKEY

oktan@ktu.edu.tr

Level	Age	Characteristic Finds	Approximate Dates
I	Medieval Age	Glazed Pottery	1000-1200 AD.
II	Early Iron Age	Coarse Ware and Buckelkeramik	1200- 980 BC.
III	Late Bronze Age	Metal Weapons and Tools	1350-1200 BC.
IV	Early Bronze Age	Yassıkaya Type Pottery	2300-2100 BC.
V	Chalcolithic Age	Dark Burnished Pottery and Idols	4300-3900 BC.

Tab. 1. Stratigraphy of İnönü Cave.

	Chalcolithic	EBA	LBA	LBA/Iron	Early Iron	TOTAL
rodent-size	0	21	1	0	0	22
small mammal	1	4	1	0	1	7
medium mammal	76	22	56	10	178	342
large mammal	76	19	39	13	60	207
med artio	28	1	1	5	21	56
large artio	36	8	26	6	40	116
Ovis/Capra	31	30	15	3	23	102
Ovis aries	0	1	0	0	3	4
Capra hircus	26	7	7	2	19	61
bovid/cervid	26	22	10	2	22	82
Bos spp	55	18	18	11	27	129
Capreolus	28	12	6	0	32	78
Cervus elaphus	25	11	4	6	22	68
Sus spp	90	33	51	19	87	280
small carnivore	0	1	0	0	0	1
medium carnivore	0	3	0	0	0	3
felid	0	0	0	0	1	1
Felis silvestris	1	0	0	0	0	1
Lynx lynx	0	1	0	0	0	1
Panthera pardus	1	0	0	0	0	1
mustelid	0	1	0	0	0	1
Martes foina	1	1	0	0	1	3
Vulpes vulpes	1	1	0	0	0	2
Ursus arctos	2	1	1	0	6	10
Lepus europaeus	1	1	0	0	2	4
freshwater crab	0	1	0	0	0	1
Reptile	0	0	0	0	3	3
Testudo	13	0	0	1	0	14
Fish	0	4	0	0	0	4
Bird	4	3	0	1	0	8
TOTAL	**522**	**227**	**236**	**79**	**548**	**1612**

Tab. 2. Number of identified specimens from İnönü Cave.

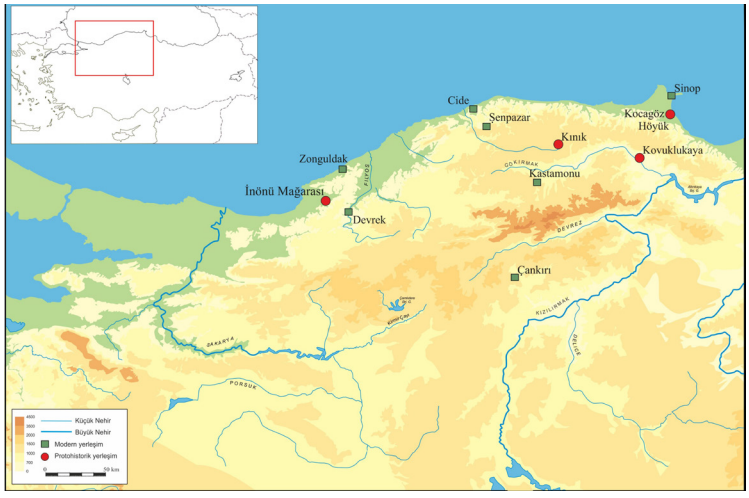

Fig. 1.
Location of the Western Black Sea Region and İnönü Cave.

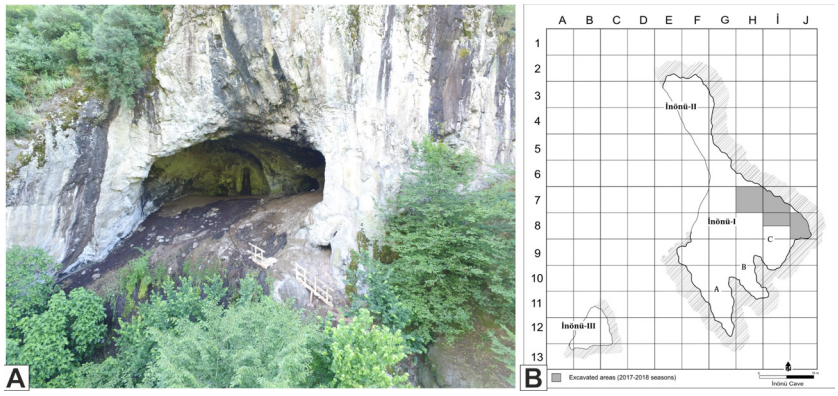

Fig. 2 A.
Southwest view of İnönü Cave B: Cave plan and excavation areas.

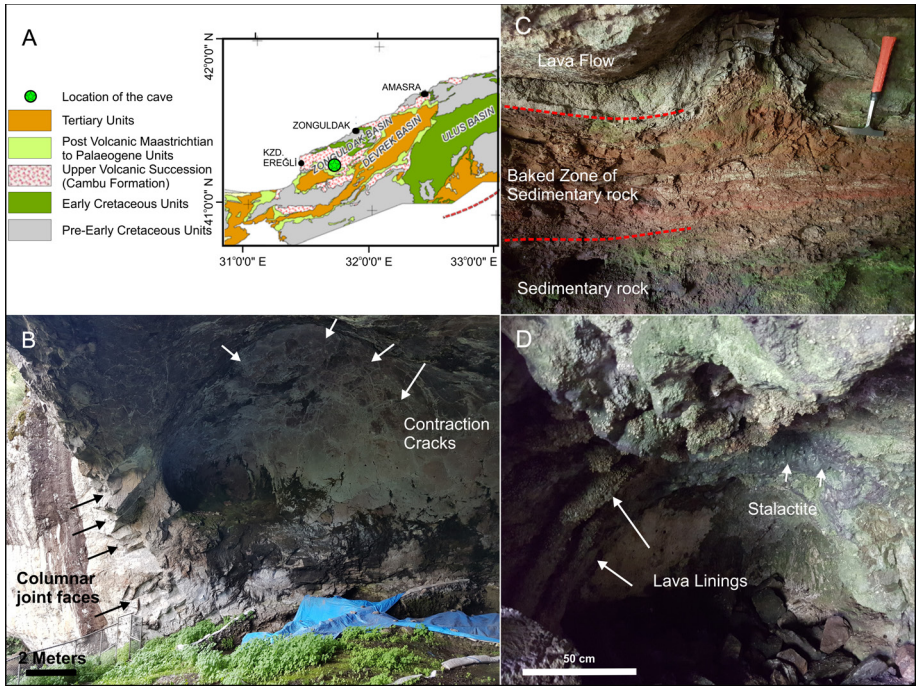

Fig. 3 A. Geological map of the cave location and stratigraphy of the cave (Keskin and Tüysüs 2017). B: Well preserved contraction cracks. Plane directions of the columnar faces and contraction cracks indicate the cave was filled with hot lava. C: Contact zone of lava flow over sedimentary rock and created baked zone. It is located in a small cave few meters below the cave. D: lava lining layer and poor conditioned stalactites envelopes the lava tube walls.

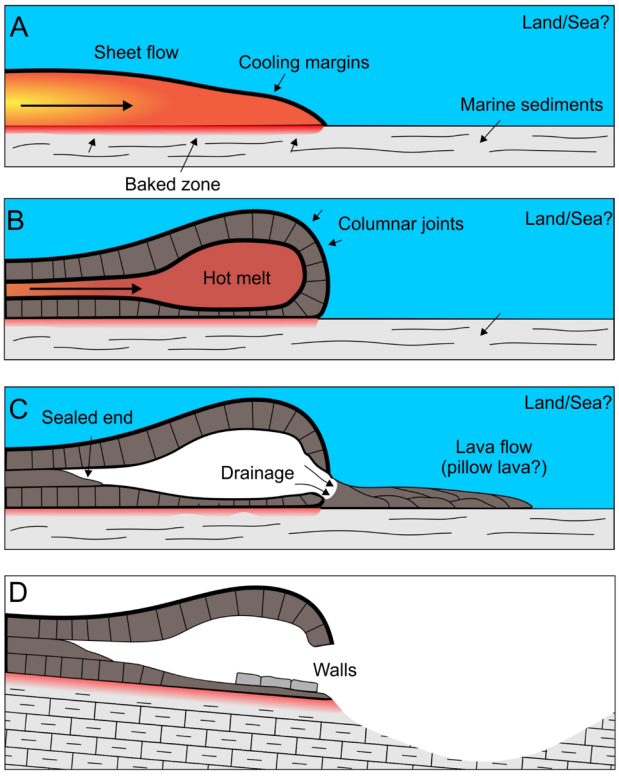

Fig. 4. Development of volcanic cave in four stages (adapted from Carracedo Sánchez et al. 2012). A) Sheet flow formed flow occurred B) Still hot melt supplied the cooled front and caused expansion of hot melt volume, C) New branch of lava flow have been formed with collapse of side wall or an internal tube network may cause the melt drained and almost cooled lava flow sealed to end of the tube, D) Due to uplift of the region has started an erosional regime.

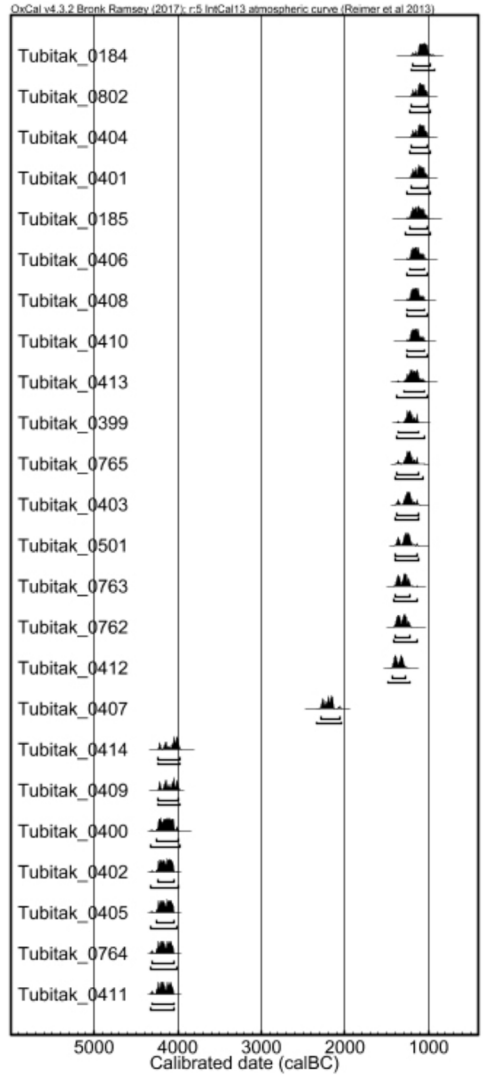

Fig. 5. Radiocarbon analysis results of İnönü Cave.

Fig. 6A. Pottery of level I of the Middle Ages. B: Bronze coin found at level I.

Fig.7. Architectural remains of Level II: votive pit and remains of a single wall.

Fig.8 A) Spindle whorls made of clay of level II, B) Sample of decorated spindle whorls, C) Spindle whorls with a biconical form and a grooved midsection.

Fig.9. Samples of the coarse ware/barbarian ware group of Level II.

Fig.10. Incised/excavated samples.

Fig. 11. Wooden floors of level III.

Fig.12. Dagger and spearhead found in level III.

Fig. 13. Pottery of the Early Bronze Age found at level IV.

Fig. 14: Level V Pottery, A: Dark-burnished pottery B: Pattern burnished pottery.

Fig. 15: Terracotta idols of level V.

Fig. 16: Beads made of gold, carnelian and steatite found at level V.

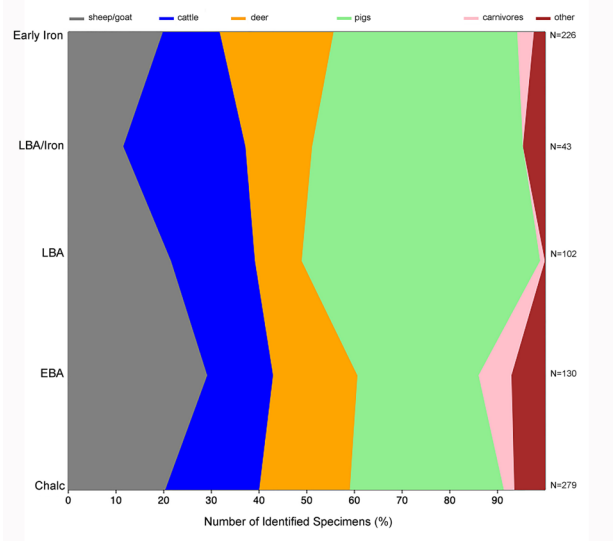

Fig. 17: Changes in the frequency of major taxa through the stratigraphic sequence (based on Number of Identified Specimens).

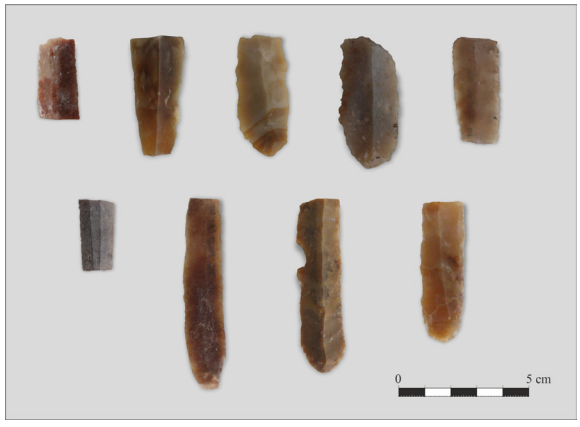

Fig. 18. İnönü Cave, samples of blade finds.

Fig. 21. İnönü Cave, arrow heads.

Fig. 19. İnönü Cave, end scraper.

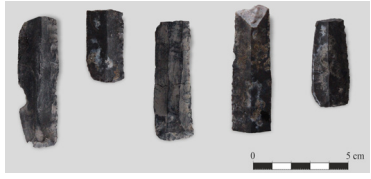

Fig. 20. İnönü Cave, samples of burnt blades.

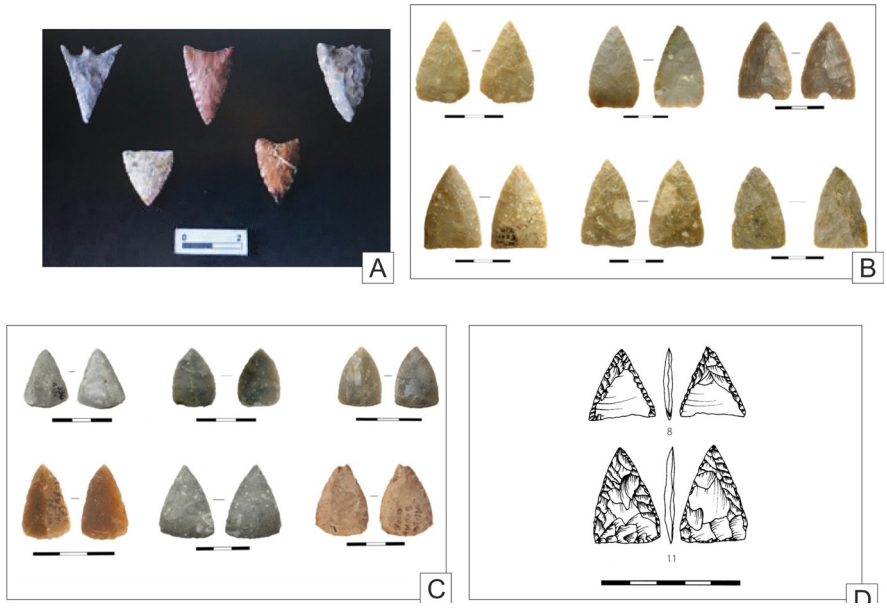

Fig. 22. A) Bronze Age Flint Arrow Heads from Ağaçlı Kumluğu, İstanbul (Özdoğan 2016: 19, Fig. 2). B) Arrow Heads from Vităneşti 'Măgurice' and Lăceni, Romania (Torcică I. 2018: 202, Fig. 7). C) Arrow Heads fromVităneşti 'Măgurice' and Lăceni, Romania (Torcică I. 2018: 200, Fig. 5). D) Flint Arrow Heads from Gradeshnitsa, Gradishteto (Kaleto) Bulgaria. (Sirakova S., Zlateva-Uzunova R. 2012: 37, Fig. 8, 11).