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A Group of Roman and Late Antique Bone Objects Found in Ancient Tralleis

CEREN ÜNAL – İSMAİL ÖZCİHAN – MERVE TOY*

Abstract

Both ancient written sources and archaeological finds provide evidence that the ancient city of Tralleis was established on the plain of the southern skirt of Mount Kestane (Mesogis). The excavations performed at ancient Tralleis have unearthed the Gymnasium, the Northern and Western Workshops, the Western Necropolis, the Arsenal and the Villa Sectors, all of which are dated to the Roman era. Also uncovered is the Episcopal Church, which is dated to the Early Byzantine period. In this study, we will introduce a group of bone objects found in the excavations conducted in the Northern and Western Workshops of the Gymnasium and on the fill area at the exit of the Arsenal. The production of bone objects and workshops of ancient Tralleis will be evaluated. A total of 30 bone objects were unearthed during the excavation, and these were examined according to their forms and functions. In their preliminary evaluation we focused specifically on the role these bone objects played in the socio-economic structure of ancient Tralleis.

Keywords: Roman Empire, late antiquity, Tralleis, bone object, workshop

Öz

Antik yazılı kaynakların yanı sıra ve arkeolojik buluntulardan da edinilen bilgilere göre Tralleis antik kenti, Kestane (Mesogis) Dağı'nın güney eteklerindeki düzlüklerde kurulmuştur. Kentteki kazı çalışmalarında Roma İmparatorluğu dönemine tarihlenen Gymnasium, Kuzey ve Batı Dükkanlar, Batı Nekropolis, Arsenal, Villa Sektörleri ve Piskoposluk Kilisesi olarak tanımlanmış Bizans Dönemi'ne ait dini işlevde bir yapı ortaya çıkarılmıştır. Bu çalışmada, Gymnasium'un Kuzey ve Batı Dükkanları'nda ve Arsenal çıkışındaki toprak dolgu alanda yapılan kazı çalışmaları sonucunda ortaya çıkarılmış bir grup kemik obje tanıtılacaktır. Bu otuz adet kemik obje, form ve işlevleri hakkında yapılan detaylı araştırmalar ışığında sunulacak, kemik üretimi ve üretim atölyeleri hakkında değerlendirme yapılacaktır. Ve kemik obje buluntularının Tralleis'in sosyo-ekonomik yapısındaki yeri vurgulanarak bir ön değerlendirme yapılacaktır.

Anahtar Kelimeler: Roma İmparatorluğu, Geç Antik, Tralleis, kemik obje, işlik

The Ancient City of Tralleis

In ancient sources, the identification of Tralleis as a Carian or Lydian city stemmed from the fact that it was established in a border region (fig. 1).¹ These ancient sources recognize the

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¹ Strabo, 14.1.42; Saraçoğlu 2018, 369; Lenger 2019, 112, n. 3.

region where the Meander River and Mount Mesogis were located as the natural border between Caria and Lydia. Ancient Tralleis is located on the famous road that stretches along the Menderes Basin and provides access to the cities of Ephesus, Magnesia ad Maeandrum, Tralleis, Nysa and Laodikeia, and continuing to the interior of Anatolia.² Tralleis was one of the most important commercial centers on this transportation route. Strabo mentions that the people of Tralleis were wealthy during the Roman Empire and that prominent members of society held the title of Asiarch and undertook important duties in the province.³ Tralleis during the Roman period was equally as important as the centers of Ephesus, Smyrna, Miletus, and Kyzikos. Not only was the city economically, politically, and socially quite powerful, but its geographical position was also strategically important.

The Bone Finds of the Tralleis Excavation

During the excavation of the warehouse during the 2019 and 2020 seasons at Tralleis, approximately 400 processed bone objects in different forms were discovered.⁴ The documentation of these objects included cleaning their surfaces, recording their measurements and photographing and inventorying them. In addition, bone objects from Tralleis in the inventory and study lists of the Aydın Archeological Museum were examined, and from them a group of artifacts were included in the present study. The evaluation of these bone objects, classified according to their forms and functions, are still ongoing. Along with the processed bone objects, approximately 500 bone objects determined to be production waste were found as well (figs. 2-3).⁵

The functions of these bone objects include use as hairpins, weaving and textile production, gaming pieces, amulets, knife handles, cosmetics, and medical spoons. The chronological classification of each bone group is in still progress, yet preliminary findings suggest that they date between the first century AD and the sixth or seventh century AD.

Distaffs, Spindles and Spindle Whorls

In the warehouse and museum studies conducted in Tralleis, five distaffs (cat. nos. 1-5), two spindles - one damaged with a broken part on one end (cat. nos. 6-7) - and two spindle whorls were identified (cat. nos. 8-9). The distaffs, spindles, and spindle whorls were uncovered at the Gymnasium-Western Workshops and the fill area at the Arsenal exit.

There are different views on the function served by distaffs in antiquity. Some experts argue that married women used distaffs in weaving, while others believe that distaffs held symbolic meanings and were given as wedding gifts to women to honor their virtuousness and roles as good mothers and wives.⁶ Whatever the case, it is nonetheless clear that distaffs were presented as marriage gifts to women who placed great value on them. This was so much so that

² Strabo, 14.2.29; Saraçoğlu 2018, 372, n. 42.

³ Strabo, 14.1.42; Lenger 2019, 113, n. 5.

⁴ We would like to thank the esteemed Prof. Dr. Nurettin Öztürk, the head of the excavations of ancient Tralleis, for encouraging our research and continuing to give his support at every stage of our work. In addition, we would also like to thank the expert archaeologists, Handan Özkan and Şenay Çekilmez who work at Aydın Archeological Museum, for their patience and support during our work.

⁵ Prof. Dr. Vedat Onar is currently preparing a study to identify the type of animal bones associated with the processed bone objects and the production waste of bones.

⁶ Kissel 1918; Danković 2020, 90; Cottica 2004, 185-92; 2007; Stemberger 2014, 75; Pasztókai-Szeöke 2011, 129-33.

they accompanied them even in death, being placed in their graves along with other personal belongings such as combs and mirrors.⁷ Although the samples obtained in excavations of the burial sites support their symbolic use, their functional use in daily life continues to be a matter of discussion.⁸

The main sites noted for their rich collection of bone objects and distaffs in excavations carried out in Anatolia include ancient Ephesus, Sagalassos, Allianoi, Parion, Smyrna, Perge, and Tralleis.⁹ In addition to these major cities, distaffs have also been found in smaller settlements, such as in the necropolis of ancient Juliopolis in the district of Nallıhan, Ankara.¹⁰ Different types of distaffs made of various materials have also been unearthed in excavations at centers of the Roman Empire outside of Anatolia.¹¹

In the eastern provinces of the Roman Empire, like Anatolia and Syria,¹² it was common for personal beauty products used by women - mirrors, combs, and perfume bottles - and objects used in spinning - distaffs, spindles, kalathoi, and spindle whorls - to be depicted on their tombstones.¹³ Examples of such tombstones commemorating deceased women as virtuous wives and good mothers have been found at different sites in Anatolia. These tombstone depictions highlight the role of women in daily life as well as symbolize their status in society. During the Roman Empire, depictions of personal belongings were not only engraved on tombstones but such personal belongings themselves were buried alongside the women in their graves alongside other personal belongings. The distaffs, spindles, and spindle whorls, given to women as wedding gifts, symbolized their honor as virtuous wives and mothers. There is still no definitive evidence, however, on whether these distaffs were actually used or were simply symbolic. Written sources indicate that distaffs were used in the spinning process, a daily domestic task performed by women. However, because the distaffs found in the tombs were in very good condition with no surface marks indicating use, this suggests that

⁷ Biró 1994, 211.

⁸ Rațiu 2016, 138; Stemberger 2014, 76.

⁹ A broken spindle was uncovered in excavations performed on the north street of the Smyrna Agora, and a spindle was found in excavations of the Mosaic Building; see Ersoy 2017, 132, cat. nos. 136-37. One complete and five broken bone distaffs were found at the burial site of the Western Necropolis in Perge, where it was clear that they had been placed symbolically in the tombs; see Çokay Kepçe 2017, 111-12. During excavations in Sagalassos, a bone distaff shaped in the image of Aphrodite / Venus Pudica was found; see Talloen 2019, 464, cat. no. 220. A distaff found in good condition in residential unit number 2 in Terrace House 2 of Ephesus symbolizes the status of the landlord; see Ladstätter 2012, 181. In excavations carried out in the women's tombs in the necropolis of Parion, two distaffs were found. One had a geometric motif and the other a broken ring and a stylized Venus depicted on the upper part. Although these distaffs from Parion have been described as belt buckles and hair clips, it is clear that they are distaffs; see Kasapoğlu 2012, 172, fig. 221 and 174, fig. 223.

¹⁰ Arslan et al. 2012, 179.

¹¹ Female-figured finger distaffs were found during excavations in necropolises dated to the 3rd and 4th centuries AD in the Roman province of Pannonia; see Pasztókai-Szeőke 2011, 132-33. Finger distaffs with traces of erosion were uncovered in the ancient settlement of Capidava, which is on the border of modern Romania. There is evidence suggesting that they were used in daily life; see Rațiu 2016, 138. Although two bone objects and a broken distaff ring were reported to be needle handles in a study examining the small finds uncovered in the Corinth excavation, it is clear that they are distaff fragments; see Davidson 1952, 286-87, pl. 119, nos. 2354, 2355 and 2389. In addition to these examples, there are bone distaffs, spindles and spindle whorls featured in various international museums and collections. For example, the Hungarian National Museum displays many distaffs from the Roman period; see Biró 1994, 196-207. Findings from the excavations in ancient settlements within the Roman Empire have helped to expand museum and private collections.

¹² There are spinning material, distaff, spindle and spindle whorl depictions on women's funerary steles dated between the first and third centuries AD in Palmyra, an ancient city in modern Syria; see Heyn 2010, 631.

¹³ Cottica 2004, 192, figs. 7-13; Pasztókai-Szeőke 2011, 129-32.

they served only a symbolic function. While experts have different opinions and suggestions, the bone pattern depicting Aphrodite in the living space of Terrace House 2 in Ephesus raises questions about the subject.¹⁴ The distaff in question was not a grave find but rather was uncovered in its natural environment.¹⁵

Different forms of distaffs were found in the Western Shop I (GYM-WS: cat. no. 3), the Northern Shop II (GYM-NS: cat. no. 5), and the Vomitorium 2 (WS-V: cat. no. 4). This indicates that they were prepared for sale in these areas. The majority of the distaffs have been uncovered in the necropolis area and in women's tombs. However, the situation is different for the distaffs found in the fill area of the entrance tunnel in the Arsenal. These are presented in cat. no. 1 and cat. no. 2. While studies continue to be conducted on the function of the Arsenal, the fact that bone production waste as well as many processed and unprocessed bone objects were found in this area suggests that it served as a site for production workshops.¹⁶

Spindles and spindle whorls are objects used together in the spinning process (fig. 4; cat. nos. 6 and 8). In Tralleis many broken spindle fragments have been found. One spindle was complete while another had a small number of fragments at one end (cat. nos. 6 and 7). Yet the presence of numerous spindle fragments in the area suggests that more shall be discovered in the future. To date, two fully formed bone spindle whorls have been uncovered (cat. nos. 8 and 9).

Astragalus, Dice and Gaming Pieces

In 1998 a bone astragalus with two holes filled with metal was found in the excavations (cat. no. 10). In antiquity the astragalus was used for a wide variety of purposes, such as a gaming piece, an amulet, a fortune-telling item,¹⁷ a votive, a cult object, a prophecy item, a weight, exchange material, a funerary gift and a pendant.¹⁸ The discovery of astragali at the site of the Western Shops of the Gymnasium / Vomitorium 1 was important, but there is uncertainty about what they were used for. Based on the middle of the astragalus having holes filled with metal, it has been argued that the astragali may have been used as gaming pieces.

The good condition of the dice made of bone is remarkable for its elaborate craftsmanship. Numbers ranging from one to six are indicated with ring decorations on each face of the cube-shaped dice (cat. no. 11). The bone dice is one of the unique examples of daily life in Tralleis.

In addition to the dice, two complete gaming pieces and two broken in half were unearthed. The surfaces of these gaming pieces of bone had been carefully polished. Three of the gaming pieces have the same flat form and circular decorations on their surfaces (cat. nos. 12,

¹⁴ Ladstätter 2012, 181, fig. 179.

¹⁵ Does this point to the use of distaffs in daily life, or could it be that the distaff could not be placed on the grave of the owner due to unforeseeable circumstances?

¹⁶ In addition, many broken or unbroken ceramic finds and metal objects were uncovered in the fill area inside and at the entrance of the Arsenal.

¹⁷ According to popular belief, when the astragalus was kept in a box, it would bring happiness to its owner. It was even believed to affect the healthy growth of babies. If the child died, it would be put next to the child's grave; see Klenina 2012, 452, n. 37. The use of an astragalus in various games was very popular in the ancient Greco-Roman world. Known as a primitive type of dice, the astragalus was used by both adults and children. The astragalus also symbolized that fate could change at any time and was believed to hold magical power. This reflection of magical power can be seen in the House of Dioscuri frescoes in Pompeii, where there is an image of Medea, a witch who famously planned to kill her children, playing with astragali; see Giunio 2013, 109, figs. 15, 17.

¹⁸ Oyarçin et al. 2018, 209.

13 and 14).¹⁹ One gaming piece differs from the others with its semi-circular form rising slightly upward and circular decorations on the underside (cat. no. 15). The following gaming pieces have been found in excavations at Tralleis: one dice in the Gymnasium / Western Workshop X (cat. no. 11), one gaming piece in Gymnasium / Western Workshop IV (cat. no. 12), one gaming piece at the fill area of the Arsenal's tunnel (cat. no. 15), and two gaming pieces in the Necropolis area (at the Southern East Gate) behind the South Basilica (cat. nos. 13 and 14).

Pyxis and Two Cochlear

In the excavations a half-broken pyxis fragment with a missing base and cover was found next to a small cochlear with a broken handle at the GYM-WS Vomitorium 1 (cat. nos. 16 and 17). The smooth surfaces of the small pyxis and cochlear reveal that they had been polished. The fact that the pyxis and the cochlear were found next to each other in the excavations suggests that they were used together. In ancient times pyxides were used to hold cosmetic or medical supplies. The find of the pyxis and the cochlear provides important data on their use. It shows that they were among the cosmetic items in an ancient woman's room for placing ointments used in therapeutic care. Although there is no definitive data on the cosmetic or medical use of the pyxis, the presence of the pyxis with the cochlear suggests that the substances stored in the pyxis were prepared for a special purpose. Therefore, the pyxis and the cochlear found in the Western Workshops / Vomitorium 1 of the Gymnasium must have come from a place where cosmetic or medical supplies were sold.

The other cochlear find from the excavations at GYM-WS / Shop III has very unique ornamentation (cat. no. 18). The seated lion figure on the handle of the bone cochlear was designed with great care. It is remarkable for being the only example of a cochlear found in Tralleis, or even in the West Anatolia Region. For our research has shown that no such item has ever been encountered. One side of the cochlear is broken and missing. With a grooved design on the end of the handle and a well-polished surface, this cochlear is one of the most original examples of bone finds in Tralleis.

A bone object with the figure of the goddess Athena on its upper part was found in the excavations at GYM-WS / Shop III. Although there is no definitive information on the function of this bone object, it is believed to be a distaff or possibly a hairpin (cat. no. 19). Athena is depicted in half-scale from the profile view; her body is in half-scale from the angle to the right. She is wearing a headdress, her classical look in the ancient period. The folds of Athena's dress are particularly detailed. The figure is in flat form, as is its broken lower part. Its broken and missing lower extension, which is the handle part, is presumed to be in flat form as well. Considering the fine style of the goddess's facial expression and the detailed craftsmanship of her dress, the object was made by an extremely skillful craftsman. Although Aphrodite, the equivalent of Venus Pudica, is commonly depicted on distaffs, it is possible that this bone object is the broken upper part of a distaff since Athena is also associated with weaving. A similar distaff, however, has not been found in the research conducted on this subject. It has also alternatively been suggested that this bone object may have been used as a decorative hairpin. All things considered, there is still not enough information to definitively declare the function of the broken object featuring Athena.

¹⁹ For similar examples, see Megow 2004, 136, pl. 27.863-67.

Comb / Hair Accessory (?) and Amulets

A bone object resembling a comb - with the tooth part missing and a ring for a handle believed to have been designed for hanging - was found in GYM.WS / Shop II (cat. no. 20). There is still much debate whether the bone object is actually a comb or not. The hair combs used by women in antiquity usually had bilateral teeth, which symbolized death and life after death. The Tralleis object has fewer rows of teeth than normally seen in hair combs. So, its small size would seemingly have made it impossible to function as a comb. Its handle has a slightly concave form, making it more comfortable for the user to hold. While it is possible that the bone object was used as an ornamental hair accessory rather than as a comb, it also could have been used for weaving. If that were the case, then the ring on the tip of the object would have been convenient for hanging it. A comparative evaluation is required to interpret the function of the object. Yet, to date, no similar example has been found, leaving the function of the object still unanswered.

The bone amulet found in front of the Northern Tower west of the Arsenal entrance was produced as a pendant (cat. no. 21). The object depicts a female figure about to give birth.²⁰ It is quite apparent that this amulet is directly related to women and fertility, since it was designed to be worn as a pendant by women to bring them fertility. In ancient times, women who wanted to have a baby would make dedications on behalf of a goddess or other divine being associated with birth and make use of talismans and amulets. In Late Antiquity, the most important social responsibility of women was to be good wives and mothers. Bone amulets or talismans for good luck were designed in a simple style and easy to wear for women wanting to conceive or bear more children. The surface of the amulet had been skillfully polished, and the details of the female's dress are arranged in a simple linear style.

Of the two bone objects, defined either as simple pendants by some experts or as amulets by others, one is complete while the other is broken at the upper part (cat. nos. 22 and 23). The neck of the bone objects features a double-line knot decoration, which served to connect the ring and the body for use as pendants.

In her book on bone finds from the Roman period in upper Moesia, S. Petković categorizes amulets under five main groups, Types I-V.²¹ Her amulet categories match the bone objects found in Tralleis. According to Petković's classification, six amulets have been identified as the club of Hercules and fall under the Type II / Variation I class.²² The Hercules club amulet was probably worn as a pendant and believed to give strength to the bearer and to provide safety.²³ It was also believed to bring fertility and health to women as well as to protect the bearer from diseases, sins and evil forces.²⁴ Type II amulets, which include a variation of Hercules' club, were specifically designed as pendants, just as the others were associated with fruitfulness and fertility. They are generally found in necklaces designed with seashells or circular bone objects, and even in similar talismans. Petković also stated that the club of Hercules generally features

²⁰ The amulet was popular among pregnant woman during the Greco-Roman period. The uterus symbol was used in different types of amulets; see Tsatsou 2015, 124 and 126, fig. 8.

²¹ Petković 1995, 40-42, pl. 27, 1-9.

²² Petković 1995, 41, pl. 27, 1-6.

²³ It is known that individuals from different social classes used pendants during the Roman period; see Hrnčiarik 2017, 44.

²⁴ Petković 1995, 41, n. 244.

a metal ring on the necklace,²⁵ but that there are examples that have a precious metal. She further mentions that such amulet pendants were widely used in different regions between the 1st and 4th centuries AD. Based on her classification, our samples were determined to belong to the 3rd and 4th centuries AD.²⁶

In a study conducted by G. Nuțu and S. Stanc in 2016, three bone objects in the form of the club of Hercules were identified as pendants.²⁷ A similar example was also found during the excavations in ancient Allianoi.²⁸ E. Karaca, in his study of a bone object found there, reported that it has a spur at the level of the hole, and that the samples without spurs existed between the 7th century BC and the 2nd century AD.²⁹ The spur must have been used to connect the decorative circles on the neck to the body which held the upper ring. The item would have been worn as a pendant. These types of amulets have two different neck forms, Types I and II, and the finds from Tralleis are included in the Type II group. The club of Hercules amulet from Tralleis is dated between the 3rd and 4th centuries AD.

Other Bone Objects

In the present study, similar samples of a flat bone object were found in Tralleis. Experts have offered different opinions about these objects. One has circular holes on both ends (cat. no. 24), but part of the hole at the end extending towards the middle of the body is broken and missing. On the object's body there are three sets of concentric circular designs, each consisting of two concentric rings. The concentric circular decorations are placed symmetrically on the polished surface of the bone object. Its back surface is smooth. There are similar examples of the bone finds of Tralleis in other regions. A comparative assessment needs to be conducted to determine the function of the bone object.

S. Petković introduces nine similarly shaped bone objects in her work and notes that the circular holes at each end of the objects are made to fix the object to leather or a textile product.³⁰ She further points out that, besides Upper Moesia, many examples have been encountered in studies carried out in the lower Danube region in what is today Bulgaria and Romania. These belong to the period stretching from the middle of the 4th century AD to the end of the 6th century AD.³¹ Petković suggested that the bone object may have been placed on belts to serve as a scabbard or possibly used to bind the harnesses of horses together.³² E. Karaca, commenting on the bone objects discovered in Allianoi, argues that although there is no definitive information about their use in antiquity, they may have been used as an applique on

²⁵ Petković 1995, 41.

²⁶ S. Petković suggests that the use of amulets in the form of Hercules' club during these centuries was related to the Gothic raids in the region in the same period. She mentions that the people were inspired by Hercules' power and staff in their struggle against Gothic raids. This can account for the increase in the use of the object, as seen in the relatively high number of finds from this period; see Petković 1995, 41, nos. 244 and 246.

²⁷ Nuțu and Stanc 2016, 228, pl. 3.9-11. The bone objects obtained in centers belonging to the Early Roman, Late Roman and Early Byzantine periods in northeast Moesia Inferior between the 1st and 4th centuries AD and Scythia between the 4th and the 6th centuries AD are presented in their study; see Nuțu and Stanc 2016, 226.

²⁸ Karaca 2017, 307, fig. 15b.

²⁹ Karaca 2017, 307. The amulets included in the simple Type I group from among the burial finds of the Western Necropolis in Perge are dated to the 2nd century AD; see Çokay Kepçe 2017, 115, La.97.U.24.

³⁰ Petković 1995, 38, 131, pl. 22, 1-9.

³¹ Petković 1995, 38, 131, pl. 22, 1-9.

³² Petković 1995, 38.

clothing.³³ In the same study, Karaca discusses the bone object samples found in studies carried out in different regions.³⁴ He further points out that the other examples mentioned in his work are dated between the 2nd and 6th centuries AD, while the bone appliques unearthed in Alliano date from the 3rd to the 5th centuries AD.³⁵

Another similar example was discovered in Parion. İ. Akkaş, in his work on the bone objects obtained during the excavations of its Roman theater, mentions a find comparable to the bone object found in Tralleis.³⁶ Referring to Karaca's work, Akkaş argues that the bone object in question functioned as an applique for carrying a dagger or a knife. Based on the description on the tomb stele in G. Waurick's work, this function would be appropriate.³⁷

However, the bone object similar to that found in Tralleis is not thick enough to have carried a dagger or a knife. Moreover, since bone material is very sensitive and fragile in terms of structure, it is very difficult to imagine its use as an applique for carrying weapons like metal daggers or knives since these would be too heavy. A more durable applique material would be needed to carry such metal weapons. Therefore, although the bone object in question could be cross-referenced with its depiction on the burial stele, this does not constitute definitive data on the material it was made of nor how it was used in daily life. It is important to note here that the applique depicted on the tomb stele and understood to be a sheath for a dagger or knife may have been made of metal.

G. Nuțu and S. Stanc, in their 2016 study, introduce bone objects dating from the 1st and 3rd centuries AD in the North Dobruja / Tulcea district which lies within the borders of Moesia Inferior. They also discuss bone objects dating from the 4th and 5th centuries AD in Scythia during the Early Byzantine period, as well in early Roman settlements.³⁸ In this study three bone objects coincide with the Tralleis finds and are dated to the Early Byzantine period. They are believed to have been used for attaching flat appliques to carry money bags on clothing.³⁹

A similar bone object is introduced in another study by S. Rafailă-Stan and G. Nuțu on the bone finds from Halmyris.⁴⁰ Rafailă-Stan and Nuțu held that this bone object served as a connector. The holes on both ends enabled the bag closure to be attached to clothes.⁴¹ They even note that bone objects used as the connecting apparatus for this type of bag closure on clothing have been frequently unearthed in excavations in the Lower Danube region, especially in Moesia Secunda and Scythia Minor. These sites date to the Late Roman period. Finds of these types of bone objects correspond to a wide range of dates, but the largest group dates to between the 5th and 6th centuries AD.⁴² For example, at Nicopolis ad Istrum, it was reported such bone objects were found that date to this period.⁴³

³³ Karaca 2009, 55; 2017, 308, 316, fig. 16d.

³⁴ Karaca 2017, 308, nos. 287 and 291.

³⁵ Karaca 2017, 308.

³⁶ Akkaş 2016, 254, fig. 3, no. 53.

³⁷ Akkaş 2016, 249, nos. 53-54; Karaca 2009, 55; Waurick 1989.

³⁸ Nuțu and Stanc 2016.

³⁹ Nuțu and Stanc 2016, 228, 230, pl. 3.15-17.

⁴⁰ Rafailă-Stan and Nuțu 2018, 144-45, fig. 2d.

⁴¹ Rafailă-Stan and Nuțu 2018, 144.

⁴² Rafailă-Stan and Nuțu 2018, 144.

⁴³ Roberts 2007.

A bone object dating between the 5th and 7th centuries AD with a similar form but slightly concaved was unearthed in the excavation of Ephesus.⁴⁴ Similar bone objects in both flat and concave form have been described as bag closures; however, the bone object from Tralleis is flat.

Objects related with daily life activities have been discovered in houses dating from the end of the 5th century AD to the first half of the 7th century AD in the Elaiussa Sebaste excavation. A.F. Ferrazzoli mentions two bone objects found in the housing area - one in complete and the other broken - used as bone spools in weaving.⁴⁵

Hence, after examining all the evidence and considering all the opinions of experts, we support the idea that the bone object from Tralleis is not an applique used for carrying a dagger or knife, but rather a bag closure or a bone spool because of its weak and fragile structure. However, the concave form of some bag closure samples weakens this argument to some extent and raises the possibility that in Tralleis, the bone object find - with its smooth surface and flat form - may have been used as a bone spool. Therefore, the function of the bone object is still a matter of debate.

A bone stopper was found at GYM.WS / Shop III. Due to its small size, it was likely used to close perfume, oil or medicine bottles (cat. no. 25).⁴⁶ The small recess in the center of the concentric circular decorations may have been made to place a small metal holder. The very fine workmanship and careful polishing of this object suggests that it was produced for special use.

In the excavations of Tralleis, various forms of hairpins were the largest group of bone objects unearthed. Studies on these hairpins are still ongoing.⁴⁷ Approximately 176 hairpins and 78 sewing needles with different forms and decorative designs have been identified. In addition, there are 154 bone objects prepared to be processed (fig. 5).

The typological grouping of the hairpins and sewing needles is still ongoing (fig. 6). The data obtained in this study will be shared as soon as possible. Similar samples of bone hairpins with conical tops, termed *discernicula* or *acus discriminialis* in Latin, have been unearthed in different periods of the excavation of Tralleis (cat. no. 26).⁴⁸ A gold-plated hairpin was found at GYM.WS / Shop IV and is now on display in the Small Artifacts section of the Aydın Archeology Museum (cat. no. 27). The gold residue on the upper part of the hairpin body suggests that it was completely gold-plated and probably belonged to a female member of a local wealthy aristocratic family or to a wife or daughter of a top ruler from the Roman Empire. Although the classification of hairpins based on their forms has not yet been completed, the hairpins can be dated between the 1st century AD and the 7th century AD.⁴⁹

After hairpins, sewing needles are the most common bone objects found in Tralleis. These bone needles have been found complete or partially broken and vary in size. It is remarkable that in addition to the ready-to-use bone sewing needles, many semi-processed pieces

⁴⁴ Pülz 2020, 182, pls. 97 and 104, B 138-39.

⁴⁵ Ferrazzoli 2012, 291 and 300, pl. 1.6.

⁴⁶ For a similar sample, see Karaca 2017, 308 and 316, fig. 16a.

⁴⁷ The hairpins and sewing needles will be comprehensively studied once the excavations in Tralleis restart in 2021. The types and numbers of hairpins and sewing needles mentioned in this study may change after this comprehensive study.

⁴⁸ For similar samples, see Karaca 2017, 299, 313, fig. 6b; Petković 1995, 33, pl. 15.5; Çokay Kepçe 2017, 104, La.98.B.24; Davidson 1952, 287, pl. 120, nos. 2386-387.

⁴⁹ It is important to note that the date range given may change as the studies on hair needles are not yet completed.

were also found. The needle presented in this study has a conic head that is eye shaped (cat. no. 28). Different variations of sewing needles have been discovered in Tralleis: some have a rounded head and a large round eye, others a straight flat head and an elongated eye, or some with a straight flat head and elongated rounded eye (fig. 7). The planned study on sewing needles in the 2021 excavation season may reveal new types and variations.

In the Tralleis excavation, different forms of folding pocketknife handles with various decorative designs were discovered. The handle of the folding pocketknife presented in this study has very faded, light red paint on both sides (cat. no. 29).⁵⁰ This suggests that it was not a simple folding knife handle, but rather artistically designed. Furthermore, the handle of the knife has a very thin inner part on one side to allow the cutting metal to be folded in. Although the cutting metal part of the knife handle is missing, there are metal remains in the places where it would have been placed. The green color fragments on the point where the knife metal would have been placed in the bone handle is metal residue. The pocketknife dates between the 4th and 6th centuries AD and was found in the excavations at the inner fill area of GYM. WS / Shop II. This particular form of folding pocketknife handle suggests that it may have been employed for personal use or for a specific field of work.

The broken ear probe made of bone is believed to have been used for medical purposes or for cosmetics (cat. no. 30). Many bone medical and cosmetic tools discovered in the excavations of ancient cities are now exhibited in museums and private galleries.⁵¹ While some experts argue that these items had medical uses, others suggest that they were cosmetic items used by women of antiquity as spoons to apply ointments and make-up to their faces.⁵² It is also possible that these items were used as droppers, since they were found along with fragrance or medicine bottles, especially in burial areas and residences.⁵³ They have also been classified under medical tools as spoon probes.⁵⁴

Conclusion

The 30 bone objects presented in this study were unearthed from the fill area at the Arsenal, Gymnasium, and Western and Northern Workshops (figs. 8-9). An examination of the contexts from the Tralleis excavation of these bone objects - each with different forms and functions - shows that they belong to the period stretching from the 2nd century AD to the 6th or 7th century AD.⁵⁵ These dates were supported by comparing the Tralleis bone objects with the bone finds from Ephesus, Alliano, Tripolis ad Maeandrum,⁵⁶ Parion, Sagalassos and Samos, which dated to the period stretching from the 2nd to the 6th centuries AD. In addition, the present study compared the Tralleis bone objects with those found in the excavations in Corinth, Caesarea Maritima / Israel and the Upper Moesia regions.

⁵⁰ For a similar sample, see Karaca 2017, 304 and 315, fig. 12b-c.

⁵¹ The broken ear spoon/spoon probe unearthed in the Ephesus excavation is dated between the 4th and 7th centuries AD; see Pülz 2020, 184, pls. 98 and 105.B 153; Karaca 2017, 302 and 314, fig. 10a.

⁵² Davidson 1952, 181, pl. 82.1325 and 1327; Petković 1995, 84, pl. 21.2-3.

⁵³ Uzel 1993, 30.

⁵⁴ Baykan 2017.

⁵⁵ Approximately 400 processed bone objects and 500 pieces of bone production waste will be presented in the preliminary publication work on the bone finds of Tralleis.

⁵⁶ B. Duman and O. Koçyiğit state in their work that the bone finds from Tripolis ad Maeandrum belong to the 4th century AD and that the diversity of finds indicates the existence of production sectors; see Duman and Koçyiğit 2019, 90, fig. 125.

Excavations continue in ancient Tralleis, an important center in Western Anatolia in Late Antiquity. So, studies on the large number of hairpins and sewing needles found at the site have not yet been completed. In examining the bone objects uncovered in Tralleis, the masterful craftsmanship used in their production stands out. The plethora of bone objects in different forms and with different functions and the large amount of production waste found in the excavation of Tralleis support the idea that the city hosted bone processing workshops.⁵⁷

Since the special tools used in the production of other handicrafts are not required in the production of bone objects and thus bone objects are not produced in places with specific equipment, it is challenging, if not impossible, to identify a workshop that was exclusive to bone production. The most significant data indicating the existence of bone production workshops are the bone object finds and the presence of production waste.⁵⁸ In the excavations performed in Tralleis, the production waste and pieces still waiting to be processed were found in the Arsenal area. It is likely that some parts of the tunnels of the Arsenal area were used as production workshops. This is supported by the many semi-processed and fully processed bone object finds and the high amount of production waste found in the fill area inside and outside of the Arsenal. It is believed that the bone objects were produced in the workshops in this area between the 2nd and 7th centuries AD, and that these products were sold in the Gymnasium and the Western and Northern Shops. The data to be obtained from future excavations in and around the Arsenal are of great importance. Nonetheless, in the light of the data obtained from the excavations to date, life in ancient Tralleis, which was located on a main transportation route, continued uninterrupted for centuries. In conclusion, these bone object finds from the Roman and Early Byzantine periods show that Tralleis was an important military, political and commercial center at the time and thus provide traces of a very dynamic urban life.

Catalog

Cat. No. 1

Distaff

Inventory Number and Find Site: TRL.01 - ARS / fill area

Description: On the distaff, the ring where the finger is inserted and the top of the body are broken with missing parts. The distaff has no decorative features on its ring, and the body has a simple rising shape on one half and fluting on the other half. Length 12 cm.

Ref: Petković 1995, 34-35, pl. 18, 10; Karaca 2012, 137, no. K.04-55; Karaca 2017, 303, fig. 11c; Çokay Kepçe 2017, 112, L.59.10, La.98.C.21; Trinkl 2004, 288, fig. 11; Şimşek et al. 2011, 537, cat. nos. 421, 569, cat. no. 480.

(3rd-6th centuries AD).



⁵⁷ Dinç and Dede 1999, 12. In addition to Tralleis, waste bone joints were also found in the excavations in Pergamon, the Western Necropolis of Perge, and Sagalassos; see Karaca 2013, 236.

⁵⁸ Hrnčiarik 2017, 25.

Cat. No. 2

Distaff

Inventory Number and Find Site: TRL.01.1323.Ke:3 - ARS-AT3 / fill area inside the tunnel

Description: On the distaff, a large part of the body is broken, but the ring where the finger is inserted is complete. There are decorative features on both sides where the ring and the body are connected. Length 7.7 cm.

Ref: Petković 1995, 34-35, pl. 18.7 and 10; Trinkl 2004, 285.4a-b and 6, 287.8 and 9, 289.13 and 15; Nuțu and Stanc 2016, 230, pl. 4.20; Gostenčnik 2012, 75-76, fig. 2.9b; Karaca 2017, 304, fig. 11g; Davidson 1952, 287, pl. 119, 2389.

(3rd-6th centuries AD).

**Cat. No. 3**

Distaff

Inventory Number and Find Site: TRL.00. GYM.B.1106.Ke:37-GYM.WS / Shop I (in front of the wall)

Description: On the distaff, the ring where the finger is inserted and the top of the body are broken with missing parts. The ring has a cross decoration, and the body has a circular form rising on a double-line ring motif. Length 7.4 cm.

Ref: Çakmakçı and Ünal 2021, 45, cat. no. 15.

(4th-6th centuries AD).

**Cat. No. 4**

Distaff

Inventory Number and Find Site: TRL.98.151-WS / Vomitorium 2, 5th century floor

Description: On the distaff, the ring where the finger is inserted is broken with a missing part, and the half of the body is broken. The point where the ring and the body are connected has decorations on it. Length 6.6 cm.

Ref: Petković 1995, 34-35, pl. 18.7 and 10; Trinkl 2004, 285.4a-b and 6, 287.8 and 9, 289.13 and 15; Nuțu and Stanc 2016, 230, pl. 4.20; Karaca 2017, 314, fig. 11f; Çokay Kepçe 2017, 112, L.49.17.

(4th-6th centuries AD).



Cat. No. 5

Distaff

Inventory Number and Find Site: TRL.08.GYM.II 426 - GYM.NS / Shop II

Description: On the distaff, the ring where the finger is inserted is mostly broken with a missing part. The body is also broken with only a small part remaining. The point where the ring and the body are connected has decorations on it. Length 3.1 cm.

Ref: Petković 1995, 34-35, pl. 18.7 and 10; Trinkl 2004, 285.5 and 6, 287.7 and 288.10; Nuțu and Stanc 2016, 230, pl. 4.20; Karaca 2012, 137, no. K.01-59; Karaca 2017, 314, fig. 11f; Şimşek et al. 2011, 641, cat. no. 601.

(4th-6th centuries AD).

**Cat. No. 6**

Spindle

Inventory Number and Find Site: TRL.00.ARS4 - ARS / inside the tunnel IV

Description: One end of the spindle is broken with a missing part. The surface of the spindle is polished. Length 14 cm.

Ref: Şimşek et al. 2011, 1051, cat. no. 1550.

(3rd-6th centuries AD).

**Cat. No. 7**

Spindle

Inventory Number and Find Site: TRL.02.1878.Ke:18.6124 - ARS / main tunnel

Description: The spindle is complete, and its surface is polished. Length 16 cm.

Ref: Şimşek et al. 2011, 1051, cat. no. 1550.

(3rd-6th centuries AD).

**Cat. No. 8**

Spindle Whorl

Inventory Number and Find Site: TRL.99.634.Ke:44 - ARS / fill area

Description: The spindle whorl has a concentric ring decoration at the center of its upper and lower surfaces. Its surface is well-polished. Diameter 2.3 cm.

Ref: Karaca 2012, 137, no. K.00-27; Karaca 2017, 314, fig. 11b; Şimşek et al. 2011, 1051, cat. no. 1550.

(3rd-5th centuries AD).



Cat. No. 9

Spindle Whorl

Inventory Number and Find Site: TRL.01-1553.Ke:21-5835 - GYM.WS / Street IV

Description: The spindle whorl has a concentric ring decoration at the center of its upper surface. Its surface is polished. Diameter 2.7 cm.

Ref: Karaca 2012, 137, no. K.00-27; Karaca 2017, 314, fig. 11b; Şimşek et al. 2011, 1051, cat. no. 1550.

(4th-6th centuries AD).

**Cat. No. 10**

Astragalus

Inventory Number and Find Site: TRL.98-153-B.10.V1 - GYM.WS / Street I

Description: It is complete and contains metal residue inside the two holes at its center. Length 3.4 cm.

Ref: Karaca 2015, 367 and 372-73, nos. 6-7; Karaca 2017, 316, fig. 14g.; Öztürk 2019, 72, 117, 121, 15-KBT2.KB57, 15-KBT2.KB73; Ersoy 2017, 116, pl. 2, cat. no. 68; Ayalon 2005, 73.252-53, fig. 27.279.

(4th-5th centuries AD).

**Cat. No. 11**

Dice (Alea)

Inventory Number and Find Site: TRL.10.2486.Ke:34-GYM-B010 - GYM.WS / Shop X

Description: It is complete and its surface is well-polished. Side length 1.5 cm.

Ref: Davidson 1952, 222, pl. 100.1745; Gill 1986, 259, pl. 384.484; Karaca 2017, 316, fig. 14c; Nuțu and Stanc 2016, 230, pl. 6.40-41; St. Clair 1996, 370, figs. 9, 17, 20; Megow 2004, 134-35, pl. 27.848-49; Goldman 1950, 399, figs. 273.89; Ersoy 2017, 116, pl. 2, cat. no. 69; Šeparović and Uroda 2009, 111, 268; Mihailescu-Bîrliba 2016, 35, pl. 3.1-5; Rathmayr 2016, 492, pl. 228.B72, 513, pl. 237.B296; Ayalon 2005, 73-74, 252-53, fig. 27.280.

(4th-6th centuries AD).



Cat. No. 12

Gaming Piece / Counter (Calculi)

Inventory Number and Find Site: TRL.01.GK-GYM-B 2001/IV - GYM.WS / Shop IV

Description: The lower surface of the gaming piece is flat and has a small circular recess at its center. Its upper surface is slightly curved upwards. There is a decorative ring motif at the center of the upper surface. Its edge is bordered. Diameter 2 cm.

Ref: Gill 1986, 261, pl. 386.516; Karaca 2017, 316, fig. 14c; Pülz 2020, 192, pls. 105 and 111. B218-220; Rathmayr 2016, 498, pl. 230.B136;

Megow 2004, 134, 136, pl. 27.866-67; Goldman 1950, 399, fig. 273.88; Gill 1986, 261, pl. 385.514; Davidson 1952, 219, pl. 99, 1679-680; Şimşek et al. 2011, 800, cat. no. 954.

(4th-6th centuries AD).

**Cat. No. 13**

Gaming Piece / Counter (Calculi)

Inventory Number and Find Site: TRL.10.2495.Ke:43/1 - GYM.10-GDKP1 grid square / burial area

Description: The lower surface of the gaming piece is flat and has a small circular recess at its center. Its upper surface is slightly curved upwards. There is a decorative ring motif at the center of the upper surface. Its edge is bordered. Diameter 2.6 cm.

Ref: Gill 1986, 261, pl. 386.516; Karaca 2017, 316, fig. 14c; Pülz 2020, 192, pls. 105 and 111. B218-20; Rathmayr 2016, 498, pl. 230.B136; Megow 2004, 134, 136, pl. 27.866-67; Goldman 1950, 399, fig. 273.88; Gill 1986, 261, pl. 385.514; Davidson 1952, 219, pl. 99, 1679-680.

(4th-6th centuries AD).

**Cat. No. 14**

Gaming Piece / Counter (Calculi)

Inventory Number and Find Site: TRL.10-2495.Ke:43/2 - GYM.010-GDKP1 grid square / burial area

Description: The lower surface of the gaming piece is flat and has a small circular recess at its center. Its upper surface is slightly curved upwards. There is a decorative ring motif at the center of the upper surface. Diameter 2.7 cm.

Ref: Gill 1986, 261, pl. 386.516; Karaca 2017, 316, fig. 14c; Pülz 2020, 192, pls. 105 and 111. B218-20; Rathmayr 2016, 498, pl. 230.B136; Megow 2004, 134, 136, pl. 27.866-67; Goldman 1950, 399, fig. 273.88; Gill 1986, 261, pl. 385.514; Davidson 1952, 219, pl. 99.1679-680.

(4th-6th centuries AD).



Cat. No. 15

Gaming Piece / Counter (Calculi)

Inventory Number and Find Site: TRL.01-1681.Ke:38.5890 - ARS-KT3-Tunnel / fill area

Description: The lower surface of the gaming piece is flat and has a decorative ring motif at its center. Its upper surface has a small circular recess at its center. Its upper surface is slightly curved upwards. Diameter 3.6 cm.

Ref: Esen 2019, 192, cat. no. 80; Karaca 2017, 316, fig. 14f; Rathmayr 2016, 511, pl. 237.B285; Nuşu and Stanc 2016, 230, pl. 6. 36 (?).

(3rd-6th centuries AD).

**Cat. No. 16**

Pyxis

Inventory Number and Find Site: TRL.99. BV/1 - GYM.WS / Vomitorium 1

Description: Half of the pyxis is broken, with a missing part. Its inner and outer surfaces are well-polished. The base and cover of the pyxis are missing. Its upper side is designed with a space for placement of the cover. The pyxis was found next to a spoon. Height 4.5 cm; Diameter 3.3 cm.

Ref: Davidson 1952, 136, pl. 69.965; Şimşek et al. 2011, 647, cat. no. 616.

(4th-7th centuries AD).

**Cat. No. 17**

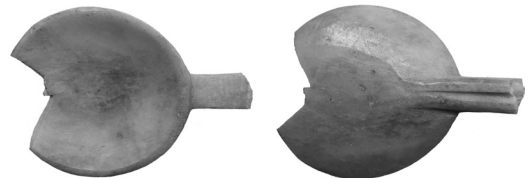
Cochlear

Inventory Number and Find Site: TRL.99.BV/1 - GYM.WS / Vomitorium 1

Description: Circular concave spoon. The cochlear was found next to the pyxis. Its handle is broken off, with a large portion of it missing. The circular end of the cochlear is also broken. Length 2.3 cm.

Ref: Ayalon 2005, 49, 234-35, fig. 18.166; Kara et al. 2017, 135-36, 149, cat. no. 4 (fig. 4a.b).

(4th-7th centuries AD).



Cat. No. 18

Cochlear

Inventory Number and Find Site: TRL.99.Ke:1.284.5137 - GYM.WS / Shop III

Description: The circular end of the cochlear is broken, with a large part of it missing. Its unbroken handle has a sitting lion motif on it. The tip of the handle has a fluting design. Length 12.8 cm.

Ref: Karaca 2017, 314, fig. 9c; Kara et al. 2017, 135-36, figs. 4a-6a.

(4th-6th centuries AD).

**Cat. No. 19**

Distaff Piece or Hairpin (?)

Inventory Number and Find Site: TRL.01.1567.Ke:23.5828 - GYM.WS / Shop IV

Description: The lower part of the object is broken off and missing. A depiction of Athena is found on the top of the object. In profile, Athena's head is depicted with a helmet, while her body is depicted from the front view. The folds of her dress and the ornamental details are formed in a linear style. Length 5.3 cm.

Ref: -

(3rd-4th centuries AD).

**Cat. No. 20**

Comb or Hairpin (?)

Inventory Number and Find Site: TRL.02-1906.Ke:30.6118 - GYM.WS / Shop II

Description: The function of the narrow and long bone object is not known precisely. There are fractures and missing parts on the teeth section. One side of its handle has a groove-shaped recess on it. At the tip of the handle, there is a circle with a hole in the middle of it. The bone object is well-polished. Length 11.4 cm.

Ref: Petković 1995, 42, pl. 28.3 (?).

(4th-7th centuries AD).



Cat. No. 21

Amulet

Inventory Number and Find Site: TRL.99.Ke:30.500.5136 - ARS West Side / in front of the Northern Tower

Description: The amulet has a depiction of a woman giving birth. On the upper part, above the woman's head, there is an extension with a hole in it to form a necklace for wearing. The face depiction and dress details of the female figure on the front of the amulet are designed in a simple style. The back surface of the amulet is well-polished. Length 2.9 cm.

Ref: -

(3rd-4th centuries AD).

**Cat. No. 22**

Amulet

Inventory Number and Find Site: TRL.01.1505.Ke:19.581 - ARS / fill area

Description: The object is described as a Hercules club and is complete. A decorative ring marks the transition point between the body and the upper part, which has a hole for wearing around the neck. Its surface is well-polished. Length 7.4 cm.

Ref: Petković 1995, 41-42, pl. 27, 1-6; Karaca 2017, 316, fig. 15b; Nuțu and Stanc 2016, 230, pl. 3, 9; Çokay Kepçe 2017, 115, La.97.U.24; Şimşek et al. 2011, 586, cat. nos. 519, 914, 934, 1106, 1179.

(3rd-4th centuries AD).

**Cat. No. 23**

Amulet

Inventory Number and Find Site: TRL.01 - ARS-KT2 / fill area

Description: The object is described as Hercules club. Its upper part is broken off and missing, and its body has fractures. Its surface is well-polished. Length 7.3 cm.

Ref: Petković 1995, 41-42, pl. 27.1-6; Karaca 2017, 316, fig. 15b; Nuțu and Stanc 2016, 230, pl. 3.9; Çokay Kepçe 2017, 115, La.97.U.24.

(3rd-4th centuries AD).

**Cat. No. 24**

Appliqué, The Bag Closure or Bone Spool (?)

Inventory Number and Find Site: TRL.08.GYM.II.541/8912 - Latrine

Description: The back surface of the object is smooth and flat, and has no decorations. There are triple concentric ring motifs on its front surface, with one located at the center and two located symmetrically on both sides. The object has a circular hole on both ends; the right hole and the



thin part of the body are broken off and missing. Its surface is well-polished. Length 9.1 cm; wide 1.5 cm; thickness 0.5 mm.

Ref: Gill 1986, 253, pl. 343.394; Petković 1995, 38, pl. 22.1-9; Akkaş 2016, 223, fig. 3.54; Nuţu and Stanc 2016, 230, pl. 3.15-17; Karaca 2017, 316, fig. 16d; Pülz 2020, 182, pls. 97, 104.B138-39; Erten 2013, 113-14, 121, pl. 23.

(3rd-6th centuries AD).

Cat. No. 25

The Stopper

Inventory Number and Find Site: TRL02-GYM/B-3 - GYM.WS / Shop III

Description: The upper and lower diameters of the cylindrical stopper are not equal. The stopper slightly widens towards the part with a concentric ring decoration. There is a small recess in the middle of the ring decoration. This recess was probably used to connect a metal attachment to the top of the stopper. There are partial cracks in the body. The surface is well-polished. 1.6 cm x 1.6 cm x 1.5 cm.

Ref: Karaca 2017, 316, fig. 16a.

(4th-6th centuries AD).



Cat. No. 26

Hairpin (*discernicula*, *acus discriminialis*)

Inventory Number and Find Site: TRL.01.ARS.1375.Ke:13 - ARS / fill area

Description: The hairpin is complete and tapers from the conical-shaped head to the end of the body. Its surface is well-polished. Length 9.4 cm.

Ref: Karaca 2017, 313, fig. 6c; Petković 1995, 33, pl. 15.5; Goldman 1950, 397, fig. 271.13; Ersoy 2017, 99, pl. 1, cat. no. 2, 17; Davidson 1952, 287, pl. 120.2386-387; Çokay Kepçe 2017, 104, La.98.B.24; Rathmayr 2016, 496, pl. 229.B109; Šeparović and Uroda 2009, 108, 256; Şimşek et al. 2011, 1055, cat. no. 1559; Ayalon 2005, 53, 236-37, fig. 19.177.

(2nd-3rd centuries AD).



Cat. No. 27

Hairpin

Inventory Number and Find Place: TRL.99.416.Ke:19 - GYM.WS / Shop IV

Description: The hairpin is complete and has pieces of gold coating on its upper part, which is narrower than the body. Its surface is well-polished. Length 7.7 cm.

Ref: Şimşek et al. 2011, 1043, cat. no. 1521.

(4th-6th centuries AD).



Cat. No. 28

Needle

Inventory Number and Find Site: TRL.99.416.Ke:19-B / in front of Shop IV - Byzantium Floor

Description: The pointed end of the sewing needle is broken. It has a hole for threading, and its surface is well-polished. Length 7.7 cm.

Ref: Nuțu and Stanc 2016, 230, pl. 4.23; Kovač 2012, 201-2, pl. 6.54-55; 127, pl. 9.166; Kara et al. 2017, 141, fig. 22a-b; Ayalon 2005, 33, 216-17, fig. 9.103.

(5th-6th centuries AD).

**Cat. No. 29**

Folding Pocket Knife Handle

Inventory Number and Find Site: TRL.99-394.Ke:13 - GYM.WS / Shop II - inner fill area

Description: Both sides of the folding pocketknife have light red paint which has faded. One side of the body is recessed for inserting the metal knife. There is some metal residue inside and around this recess. There are traces of green-colored marks left by the metal of the knife on the bone object. The object has a small hole to facilitate the entry and exit of the tip of the metal blade into the slit of the bone. The end of the pocketknife gets thinner and ends with a circle ornament. Its surface is well-polished. Length 7.1 cm.

Ref: Petković 1995, 50, pl. 36.3; Karaca 2017, 304, fig. 12b-c; Rathmayr 2016, 494, pl. 228.B85; Ayalon 2005, 16, 204-5, fig. 3.31-32.

(4th-6th centuries AD).

**Cat. No. 30**

Concave Ear Probe (Ligula)

Inventory Number and Find Site: TRL.99-835.Ke:52 - ARS / fill area

Description: The handle of the ear probe is broken and missing. The spoon part is complete, and its surface is well-polished. Length 4.8 cm.

Ref: Pülz 2020, 184, pls. 98, 105.B153; Ersoy 2017, 138, pl. 3, cat. no. 159; Davidson 1952, 184, pl. 82.1325; Rathmayr 2016, 497, pl. 229.B131; Uzel 1993, 27 and 29, pl. 4.4; Uzel 2000, 290, pl. 140.16; Şimşek et al. 2011, 790, cat. no. 919; Ayalon 2005, 50, 234-35, fig. 18.169.

(3rd-5th centuries AD).



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FIG. 1 Aerial photo of Tralleis.



FIG. 2 Production waste of bones.

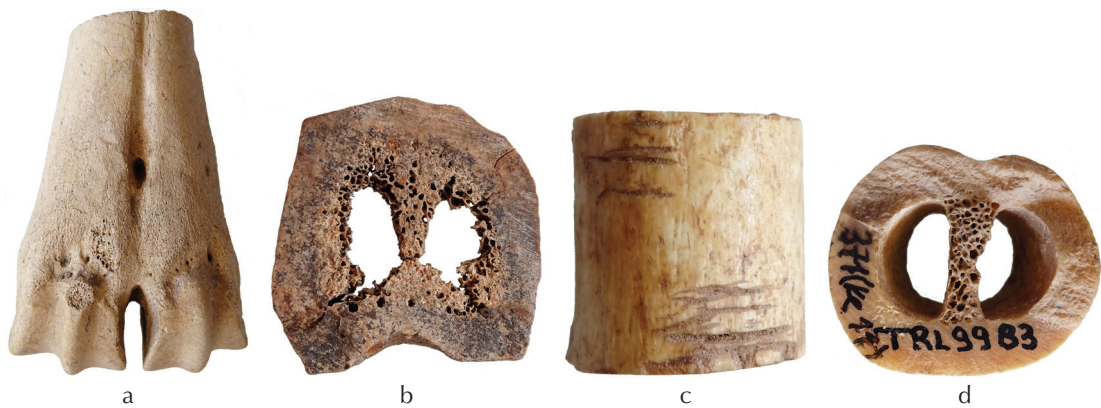


FIG. 3 Production waste bones (in detail).



FIG. 4
Spindle with a whorl.



FIG. 5
Bone finds prepared
to be processed.



FIG. 6
Hairpins in different forms
found in Tralleis.



FIG. 7
Sewing Needles
in different forms
found in Talleis.

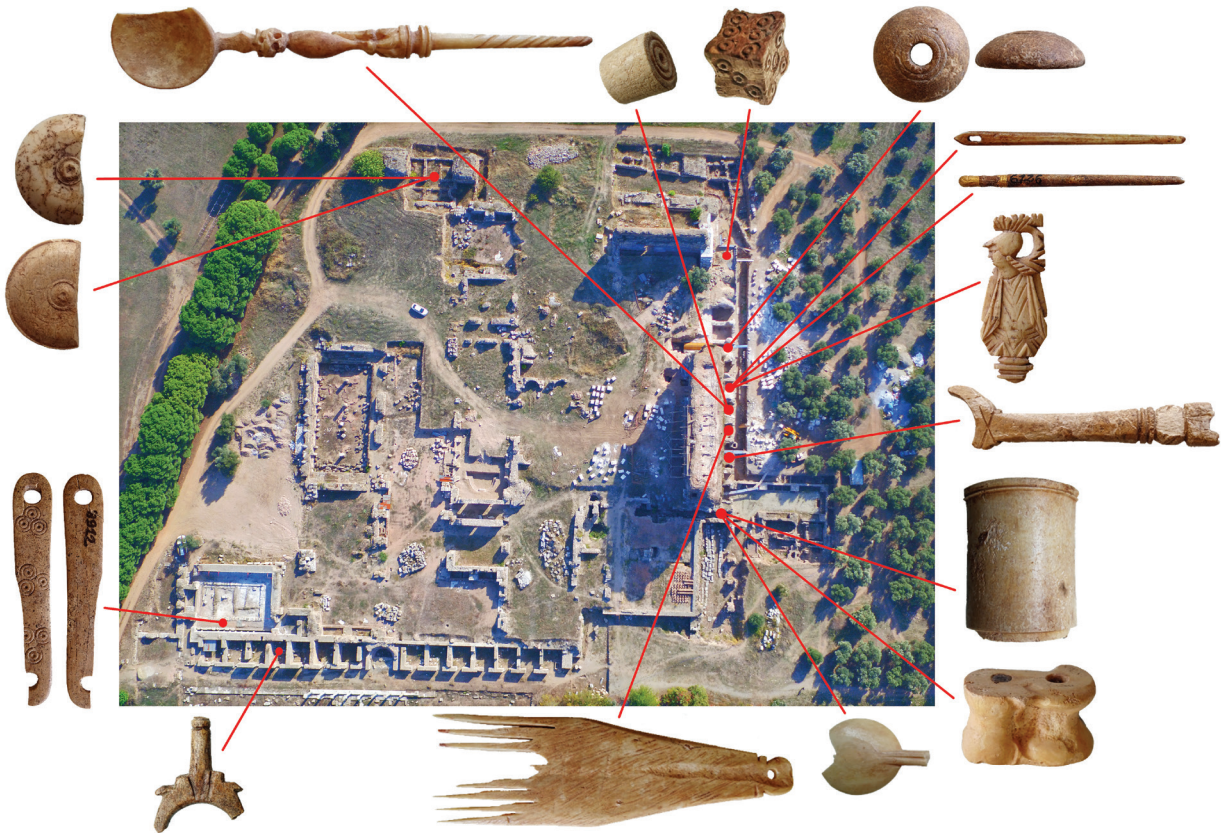


FIG. 8 Gymnasium and Western and Northern Workshops.

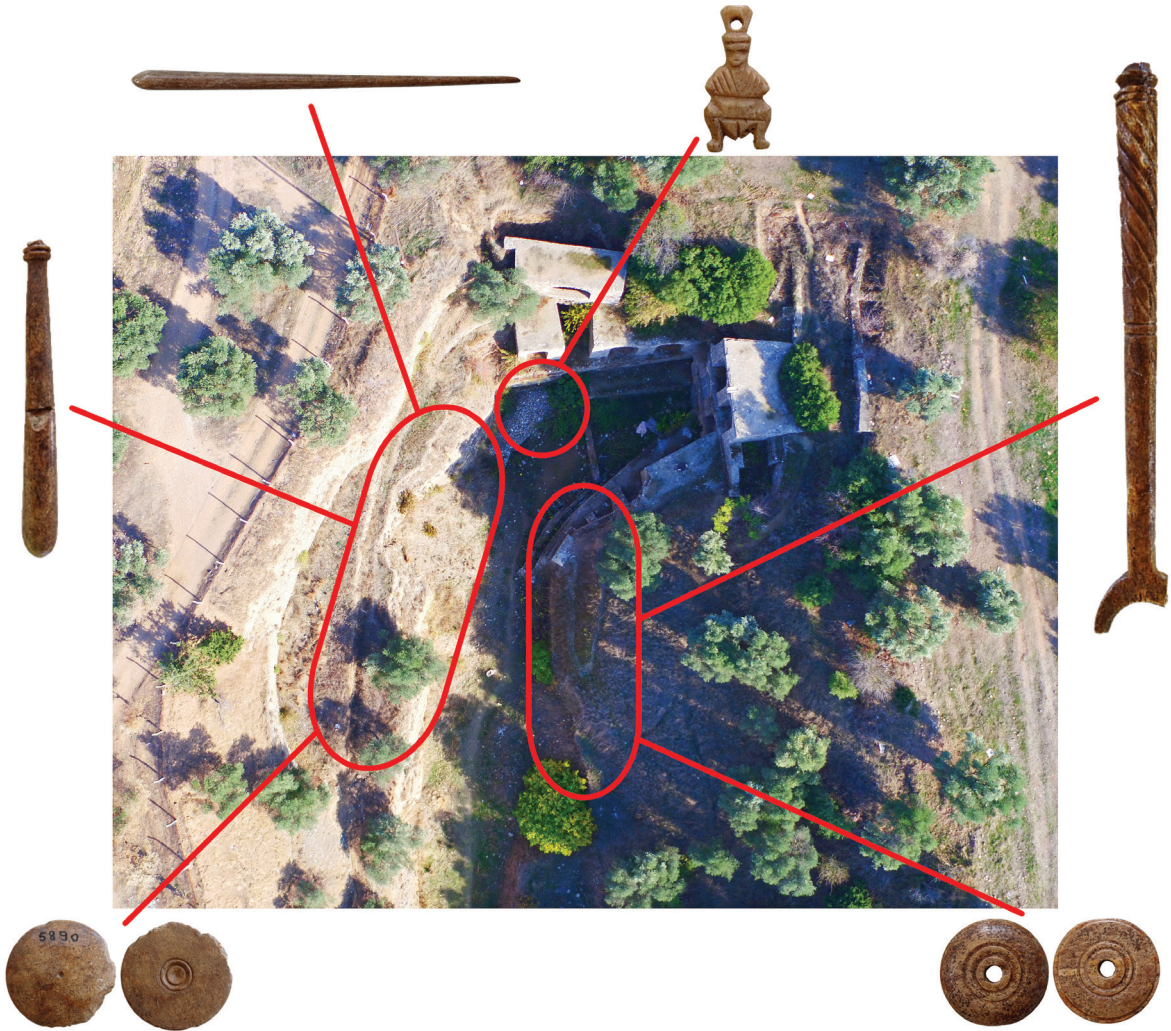


FIG. 9 Fill area in front of the Arsenal.

