10.31195/ejejfs.475170

Eurasian Journal of Forest Science
2019 7(1): 40-53

http://dergipark.gov.tr/ejejfs

Identification and evaluation of the wood materials used in two historical djemevies in the village of Onar (Arapgir, Malatya)

Ünal Akkemik[1], Ayfer Zencirkaya[2], İsmail Kaygusuz[3]

[1] *İstanbul University-Cerrahpaşa, Forestry Faculty, Forest Botany Department, 34473 Bahçeköy - İstanbul*
[2] *Arapgir Municipality, Tourism Office, Arapgir, Malatya*
[3] *Researcher-Writer, Onar Village - Arapgir, Malatya*
Corresponding author: uakkemik@istanbul.edu.tr

Abstract
In Onar Village of Malatya-Arapgir district, there are two djemevies (Büyük Ocak and Küçük Ocak), which are estimated to be about 800 years old, and open to visitors. The aim of this paper is to identify the trees used in the poles of these two wooden buildings with high cultural value and to evaluate them in terms of material usage. Within the scope of the study, a small piece was taken from each of the nine poles of Büyük Ocak Djemevi and six poles of Küçük Ocak Djemevi. Identification results of wood anatomical properties showed that the trees of the poles used in the construction of djemevies were mulberry (*Morus* L. sp.), white oak (*Quercus* L. sect. *Quercus*), ash (*Fraxinus* L. sp.), poplar (*Populus* L. sp.), pine (*Pinus* L.). sp.) and wild pear (*Pyrus* sp.). The most commonly used trees were found to be mulberry, poplar, and ash, and the same kind of trees were also used in the roofs of the djemevies. Poplar is also an important tree used in historical buildings in the region. The trees used in djemevies are the trees that grow in the region. Within the identified trees, pine (Scotch pine) is naturally grown in the Sivas-Erzincan line in the region and it is thought to be brought from this region along the Euphrates. According to our findings, these types of woods used in the djemevies were also preferred in the buildings of Kemaliye and Arapgir. Finally, it can be concluded that there is a historical continuity in the use of native wood growing in the nearby environment.

Keywords: Onar Village, Büyük Ocak Djemevi, Küçük Ocak Djemevi, Arapgir

Kısa Özet

Malatya-Arapgir ilçesi Onar Köyü'nde, yaklaşık 800 yıllık olduğu tahmine edilen, büyük olanı ziyarete açık iki cemevi (Büyük Ocak ve Küçük Ocak) bulunmaktadır. Makalenin amacı, kültürel değeri çok yüksek olan bu iki yapının direklerinde kullanılan ağaçların tanımı ve malzeme kullanımı açısından değerlendirilmesidir. Çalışma kapsamında Büyük Ocaktaki sekiz ve Küçük Ocaktaki altı direkten birer küçük parça alınmış ve tanımları yapılmıştır. Yapılan analizler sonucunda, cemevlerinin yapımında kullanılan direklerin ağaçları dut (*Morus* L. sp.), Akmeşe (*Quercus* L. sect. *Quercus*), dişbudak (*Fraxinus* L. sp., kavak (*Populus* L. sp.), çam (*Pinus* L. sp.), ve ahlat (*Pyrus* sp.) olarak tanımlanmış, bunlar içerisinde en çok kullanılan ağaçların dut, kavak ve dişbudak olduğu saptanmıştır. Dut ağacı, tarih boyunca bölgede yoğun olarak kültürü yapılan ve yapılarda kullanılan bir ağaçtır. Kavak da, benzer şekilde bölgedeki tarihi yapılarda kullanılmış önemli bir ağaçtır. Sonuç olarak cemevlerinde kullanılan ağaçlar, bölgede yetişen ağaçlardır. Ağaçlar içerisinde çam (sarıçam) bölgenin kuzeyinde Sivas-Erzincan hattında doğal olup bu bölgeden Fırat nehri boyunca getirilmiş olabileceği düşünülmektedir. Cemevlerinin yapımında kullanılan ağaçlar, tespitlerimize göre tarihi Kemaliye ve Arapgir Konaklarında da kullanılmıştır. Sonuç olarak, ağaç kullanımında doğal ve yakın çevredeki ağaçların tercih edildiği yönünde tarihsel bir süreklilik olduğu tespit edilmiştir.

Anahtar kelimeler: Onar Köyü, Büyük Ocak Cemevi, Küçük Ocak Cemevi, Arapgir

INTRODUCTION

Life, beliefs and cultural accumulation in Anatolia goes back to prehistoric times. An important landmark in the history of mankind was enlightened with the excavations of Göbeklitepe. Anatolia was a land where migrants and wars and many different cultures passed, settled and left their marks. One of the important points of this land piece is Onar Village, which has a long historical and cultural accumulation. The historical information regarding the establishment of the village and the oldest Djemevi in Anatolia, Onar Village, and Büyük Ocak Djemevi, are summarized below:

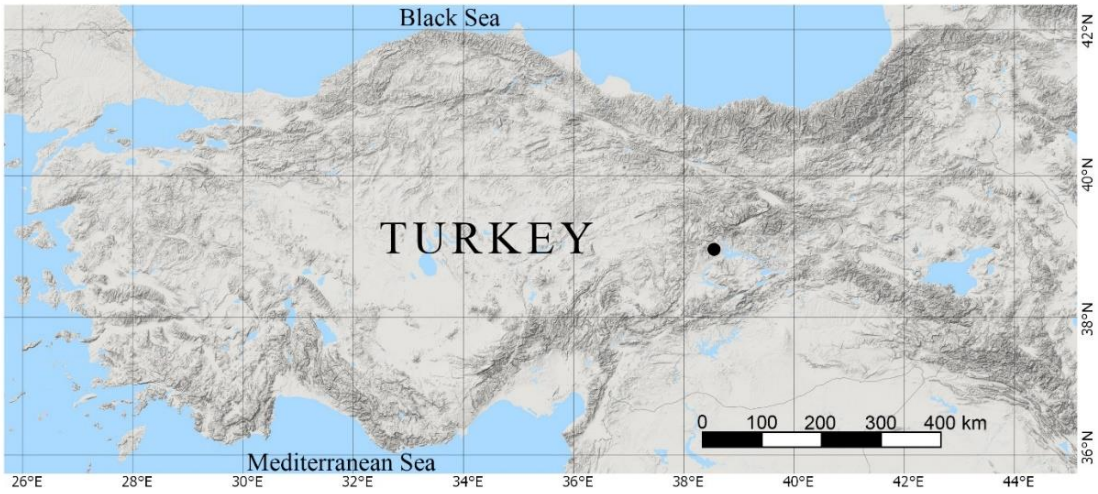
History of Onar Village: The history first can be divided into three periods as Prehistoric, Hellenistic-Roman-Byzantine and the third as Seljuk Period. The founder of the modern-day village of Onar, Turkmen (Bayat) Settlement and Colonizer (founder, settler) Sheikh Hasan Onar is the land of the village which was built within the frame of Onar Zaviyesi settlement during the period of Anatolian Seljuk Sultan Alâaddin Keykubat (1221-1237). Sheikh Hasan Onar, who was of Horasan origin, first came to Anatolia in 1205; He was in the embassy delegation of the Islamic scholars of the time such as Muhyiddini Arabi, Mecdüddin Ishak, and Evhadüddin Kirmani and Ahi Evren, which was sent by the Caliph of Baghdad to Konya Seljuk Sultan 1. Gıyaseddin Keyhusrev. Shaykh Hasan Onar, like Hünkâr Hacı Bektaş Veli who came to Anatolia about 30 years after him, is also a noble son of Ehlibeyt who spread the belief of Alevi-bâtını and invites them to faith. It was very likely that in the beginning of 1220, he established the dervish lodge, and in 1224, the state was officially registered with the Vakıfname, which defines the boundaries and conditions of use of the land devoted to the Derwish Lodge received from the Seljuk order (Malatya). The "Büyük Ocak Djemevi", which is a part of Onar's Derwish Lodge, was preserved until today and is the oldest djemevi known. The name of the village "Onar" has been used after Sheikh Hasan Onar since that time.

In the context of the illumination of human history; tools, materials, environments found in such historical areas may give valuable information. In this context, the use of wood materials also provides an understanding of the reasons of lifestyles and material preferences, and even allows the construction and repair dates to be determined if a suitable wood sample is available. For example, according to the results of 27 of 37 ships extracted from the Istanbul-Yenikapı excavations, the use of wood materials from the 4th century to the 11th century has changed completely (Akkemik and Kocabaş 2013 and 2014; Akkemik, 2015). In Turkey, the identification of the wood, which was used in excavations and historical buildings in different regions (Kayacık and Aytuğ, 1968; Aytuğ, 1970; Şanlı, 1988 and 1989; Blachette and Simpson,1992; Erdin and Tırak, 2009; Akkemik and Metin, 2011; Yaman, 2011; Doğan et al., 2017) gave rather valuable information about wood use through the history. Thus, some areas such as the use of wood materials in the distant and recent history, the choice of wood materials in the construction of daily household and hand tools have been revealed.

This type of work is also an important affair to be solved before restoration. Since the timber used to replace the original material must be of the same genus during the renovation or repair of a wooden material, the diagnosis of the existing wood is one of the priorities of the restoration. In this context, the aim of the study is to identify the woods used in the poles of these two buildings with high cultural value and the evaluation of the material usage.

MATERIAL AND METHODS

The wood samples from two djemevies, which have a high historical and cultural value, were taken in Onar Village of the Arapgir District of Malatya (Figure 1) one of which was slightly larger (Figure 2-4) and the other smaller (Figure 5-6). The sizes of Büyük Ocak Djemevi are 9.90 x 8.50 m, dimensions of Küçük Ocak Djemevi are 7.80 x 7.70 m.



Şekil 1. Location of Onar village, Arapgir-Malatya

Figure 2. A general view of "Büyük Ocak Djemevi"

Within the scope of the study, samples were taken for the identification of the types of wood materials used in the poles of the Djemevi (Figure 5-6). The positions of the poles and the numbers of the samples taken are given in Figures 7 and 8. The specimens are taken from the cracks of the poles and the parts not visible from the outside by a sharp knife. In this context, a total of 15 samples were studied. Nine of the samples were taken from Büyük Ocak Djemevi and 6 were taken from Küçük Ocak Djemevi.

In the identifications of samples, wooden recognition atlases written by Schweingruber (1988), IAWA Committee (1989 and 2004) and Akkemik and Yaman (2012) were used and microscopic photographs were taken using Leica DM2500 microscope and imaging system.

Figure 3. Wooden wish pole in Büyük Ocak Djemevi (right)

Figure 4. Wooden poles in “Büyük Ocak Djemevi”

Figure 5. Sample collection from “Küçük Ocak Djemevi”

Figure 6. Sample collection from “Küçük Ocak Djemevi”

RESULTS AND DISCUSSION

As a result of the studies of wood identification, the following genera have been identified (Figures 7 and 8) and the properties used in the identification of these species are given below:

Gymnosperms

- Pine [*Pinus* L. (*Pinus sylvestris* L.)]

Angiosperms

- Wild pear (*Pyrus* L.)
- White oak (*Quercus* L. sect. *Quercus*)
- Ash (*Fraxinus* L.)
- Mulberry (*Morus* L.)
- Poplar (*Populus* L.)

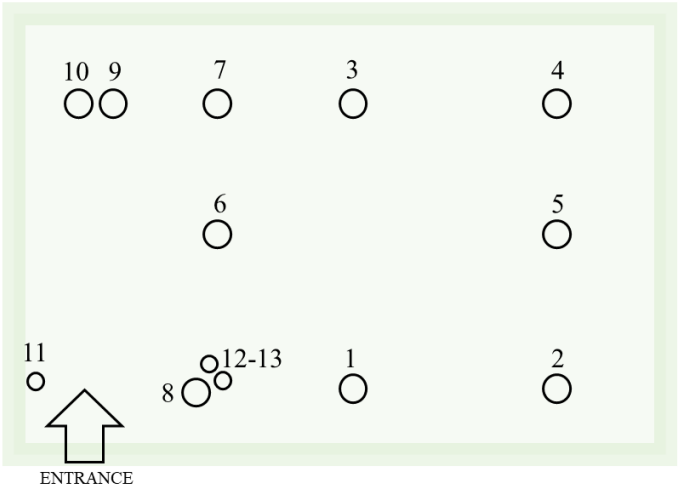


Figure 7. Definition of the poles, sample numbers and their location within the Büyük Ocak Djemevi.

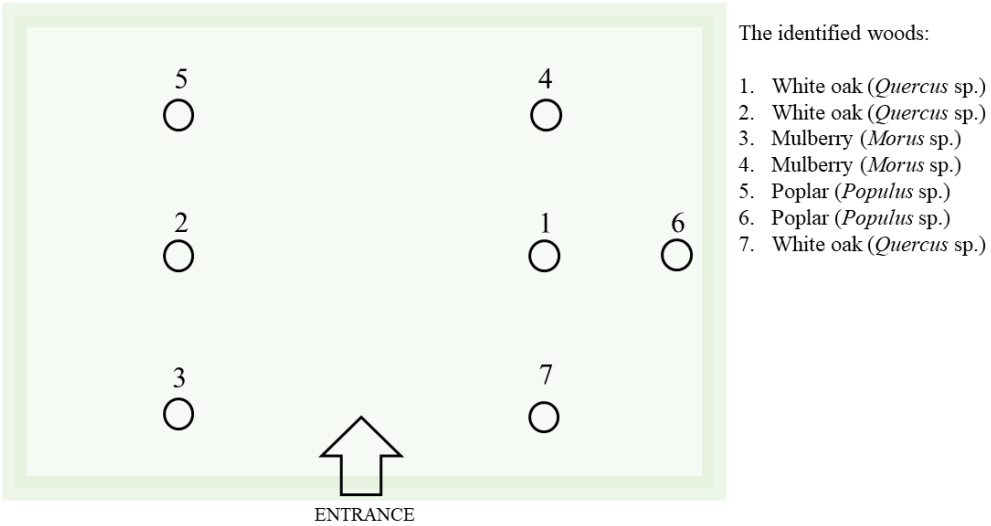


Figure 8. Definition of the poles, sample numbers and their location within the Küçük Ocak Djemevi.

Pinus (Figure 9)**:** Annual ring boundaries distinct, transition from earlywood to latewood evident and resin channels present generally in latewood. Axial parenchyma absent. Ray heterogeneous and some rays have horizontal resin canals. All rays have ray tracheids. The ray tracheids 2-3 in the upper and lower parts of the rays, and the inner walls of ray tracheids are markedly toothed. Cross-field pits pinoid (window-like) type. These features obtained from the samples belong to the typical pine wood. In particular, the existence of window-like cross-field pits is characteristic of Scots pine and black pine. There is only one difference that slightly visible. The transition from earlywood to latewood gradual in Scots pine and abrupt in black pine, in general (Schweingruber, 1988; Akkemik and Yaman, 2012). For these reasons, it is concluded that the pine specimen which is defined is the Scots pine species. On the other hand, while the Scots pines establish natural forests in the north of the region, black pine grows on the west of Anatolian diagonal.

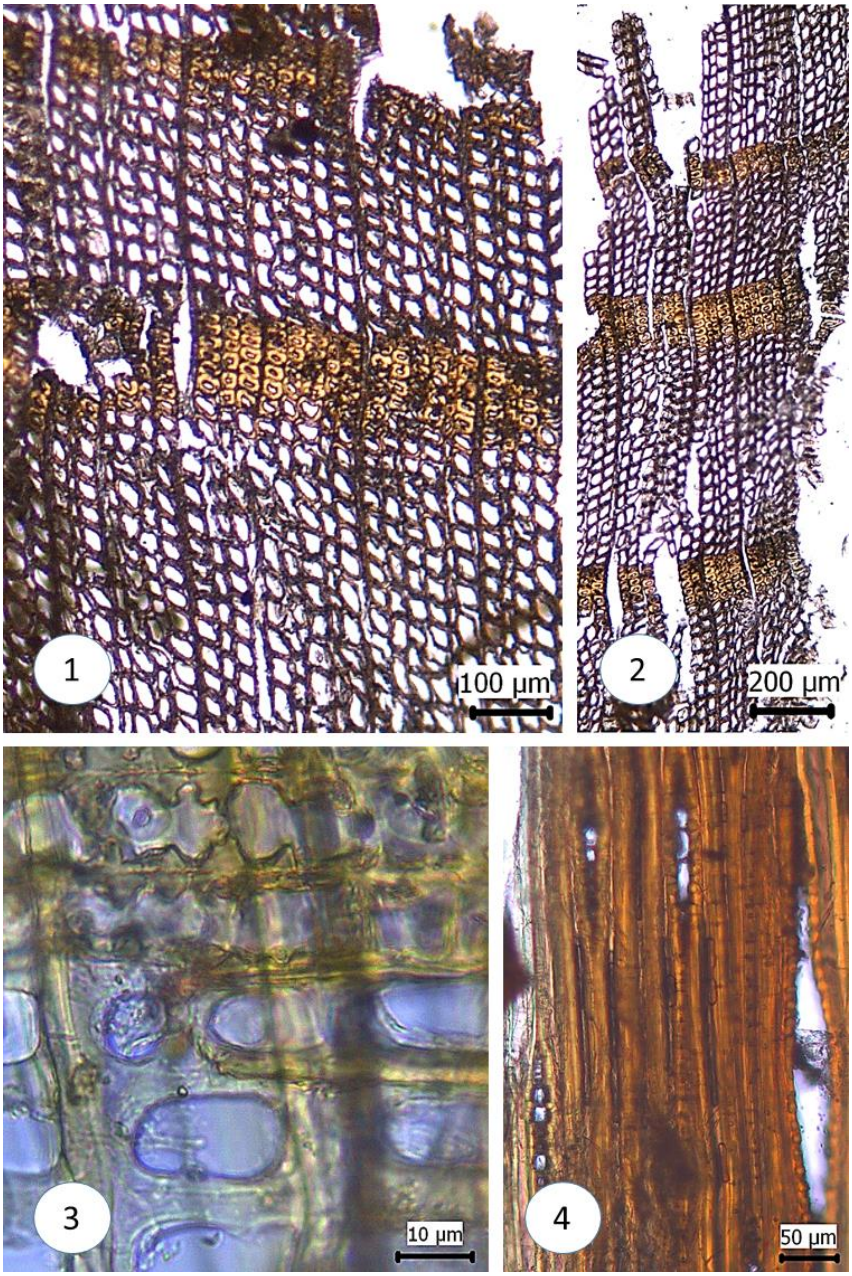


Figure 9. Anatomical features of the pine wood.

Wild pear (Figure 10): Wood homogeneous, vessel number per square mm 40-100 in general or more. The transition from earlywood to latewood gradual, and not obvious. Tree-ring boundary distinct. Vessel

diameters lower than 50 µm. Rays 1-3 seriate and homocellular. Sometimes lower than 20 cells. Perforation plate simple. Axial parenchyma found in tangential bands of rays. Determined wood properties Fahn et al. (1986), Schweingruber (1988) and Akkemik and Yaman (2012) are included in the features given by the example is described as wild pear.

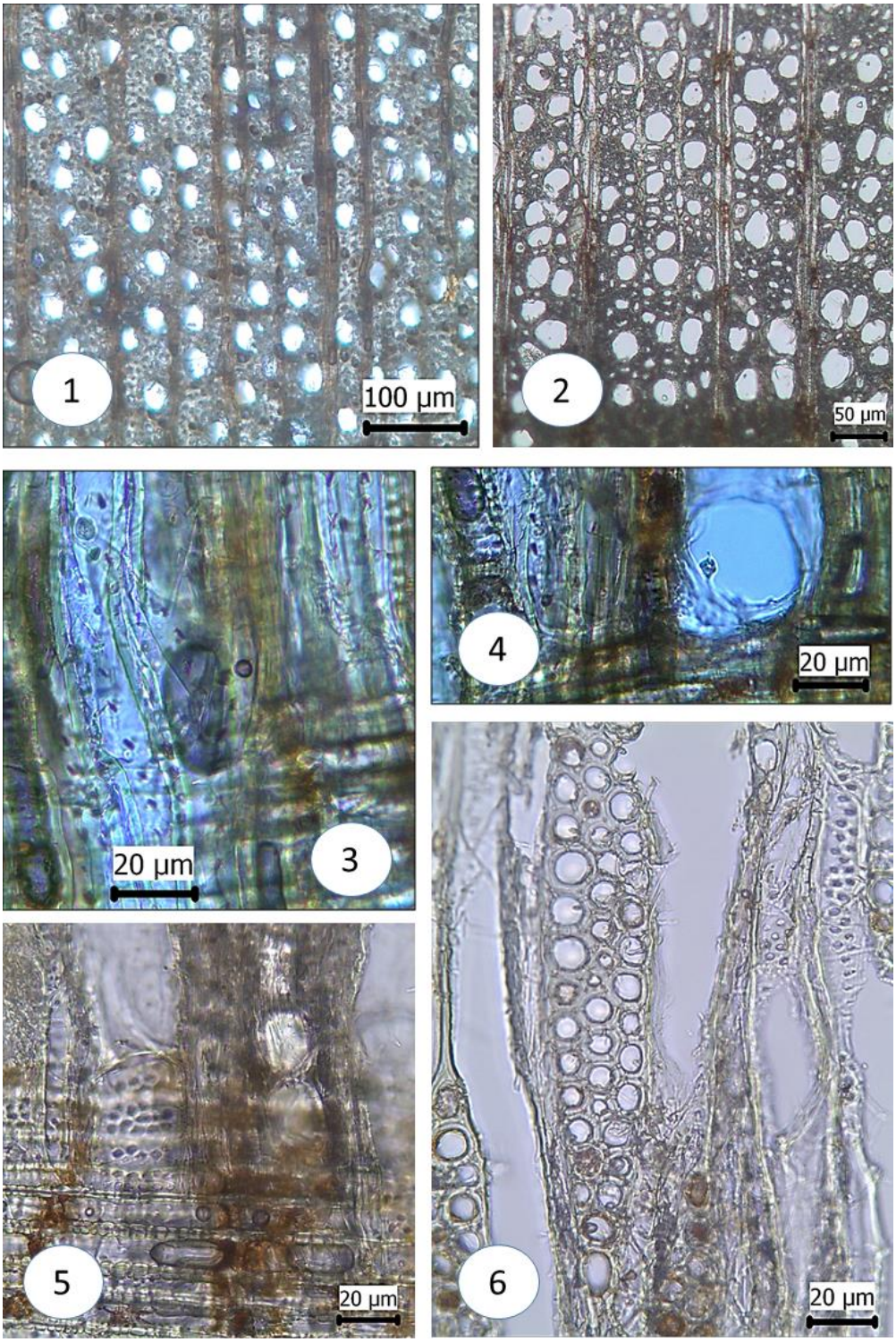


Figure 10. Anatomical features of the wild pear wood.

Quercus section Quercus (white oak group) (Figure 11): The identification of this section is rather easy. Wood ring porous, growth ring boundary distinct, transition from earlywood to latewood abrupt and arrangement of vessels in wide rings are in the form of a flame tongue and diffuse in narrow rings. Rays very wide, and visible with naked eyes (Akkemik and Yaman, 2012). This type of wood was used in both djemevi.

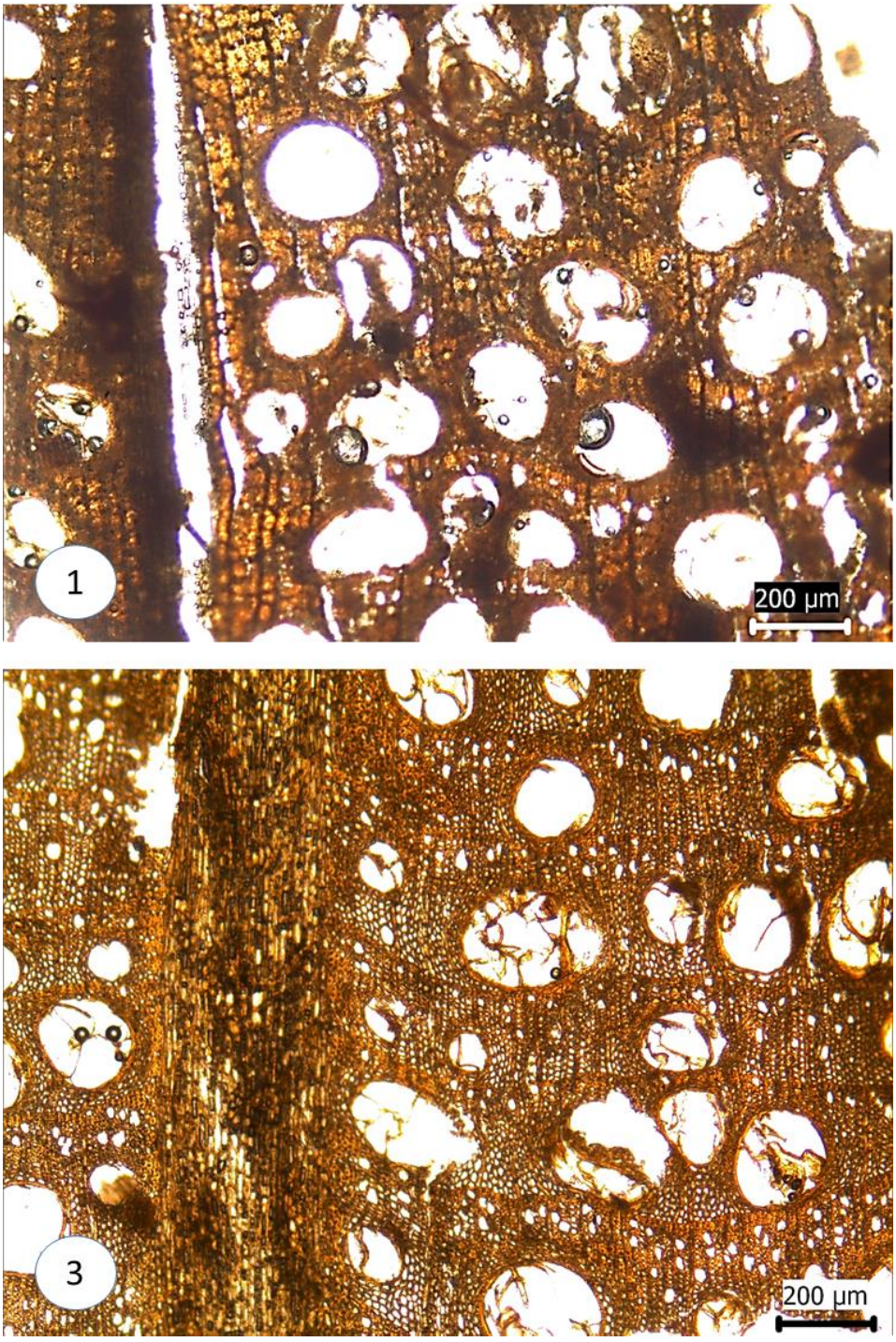


Figure 11. Anatomical features of the white oak wood.

Ash tree (Figure 12). Wood ring porous, and tree-ring boundary distinct, broad earlywood vessels up to three (1-3) rows, while latewood vessels are scattered and usually single, in radial multiples of 2-3 vessels. The walls of the vessels are markedly thick. Perforation plates simple. Rays shorter, and average ray heights 10-15 cells, 1-3 cells in width and homocellular. The parenchyma strands are 5-8 cells, and thick-walled (Fahn et al. 1986; Schweingruber, 1988; Akkemik and Yaman, 2012). *Fraxinus excelsior* grows naturally in the region.

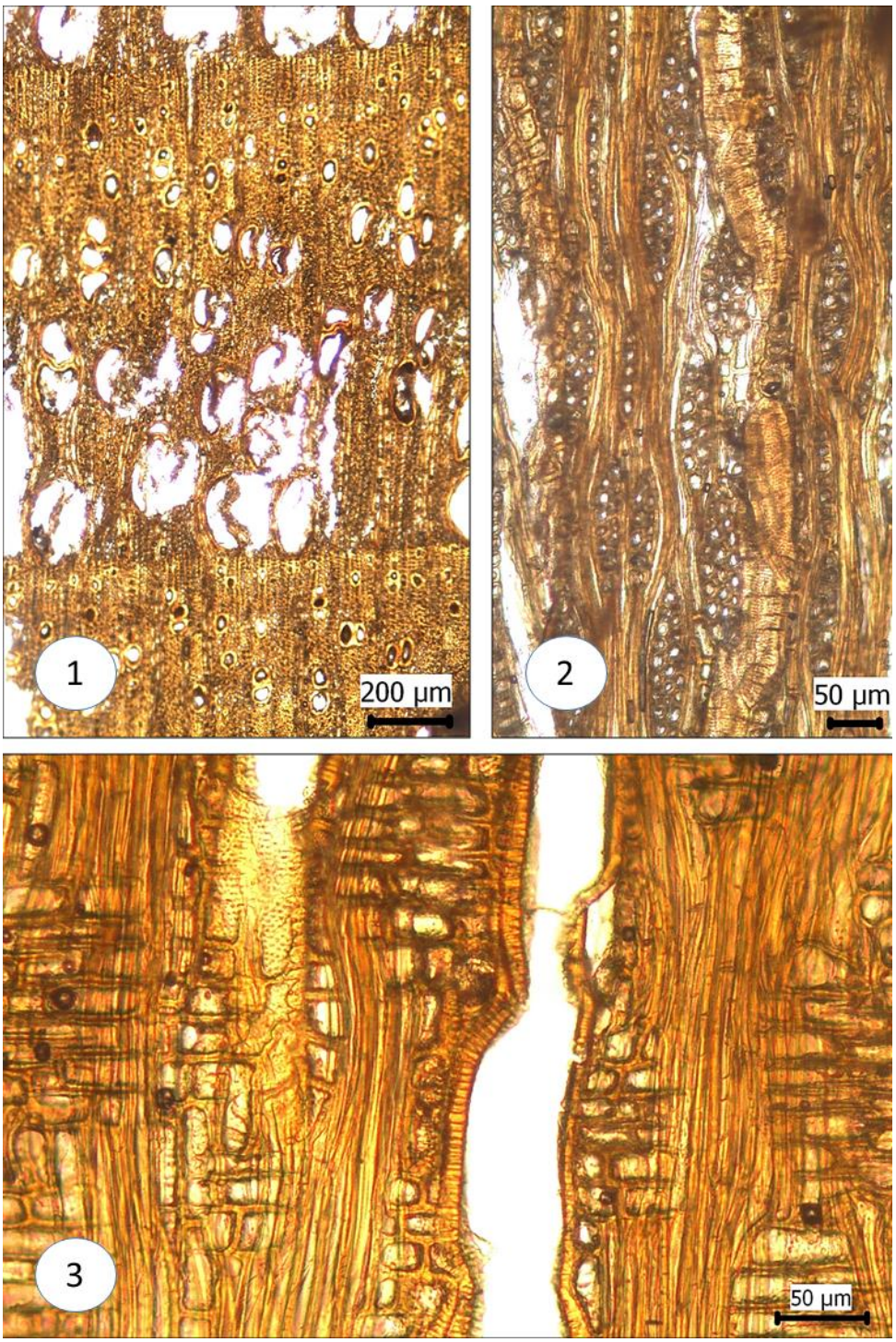


Figure 12. Anatomical features of the ash wood.

Mulberry (Figure 13): Wood ring porous and tree-ring boundary distinct. The essel in earlywood in 2-4 rows, solitary or in radial multiples up to 4 vessels. Latewood vessels small in diameter, generally in groups. Axial parenchyma dense and paratracheal. Perforation plates simple. Ray height up to 60 cells, and width up to 7 cells. Rays heterocellular, body ray cells procumbent with 1-2 rows of upright or squared cells. Crystals can be seen in ray cells (Schweingruber, 1988; Akkemik and Yaman, 2012).

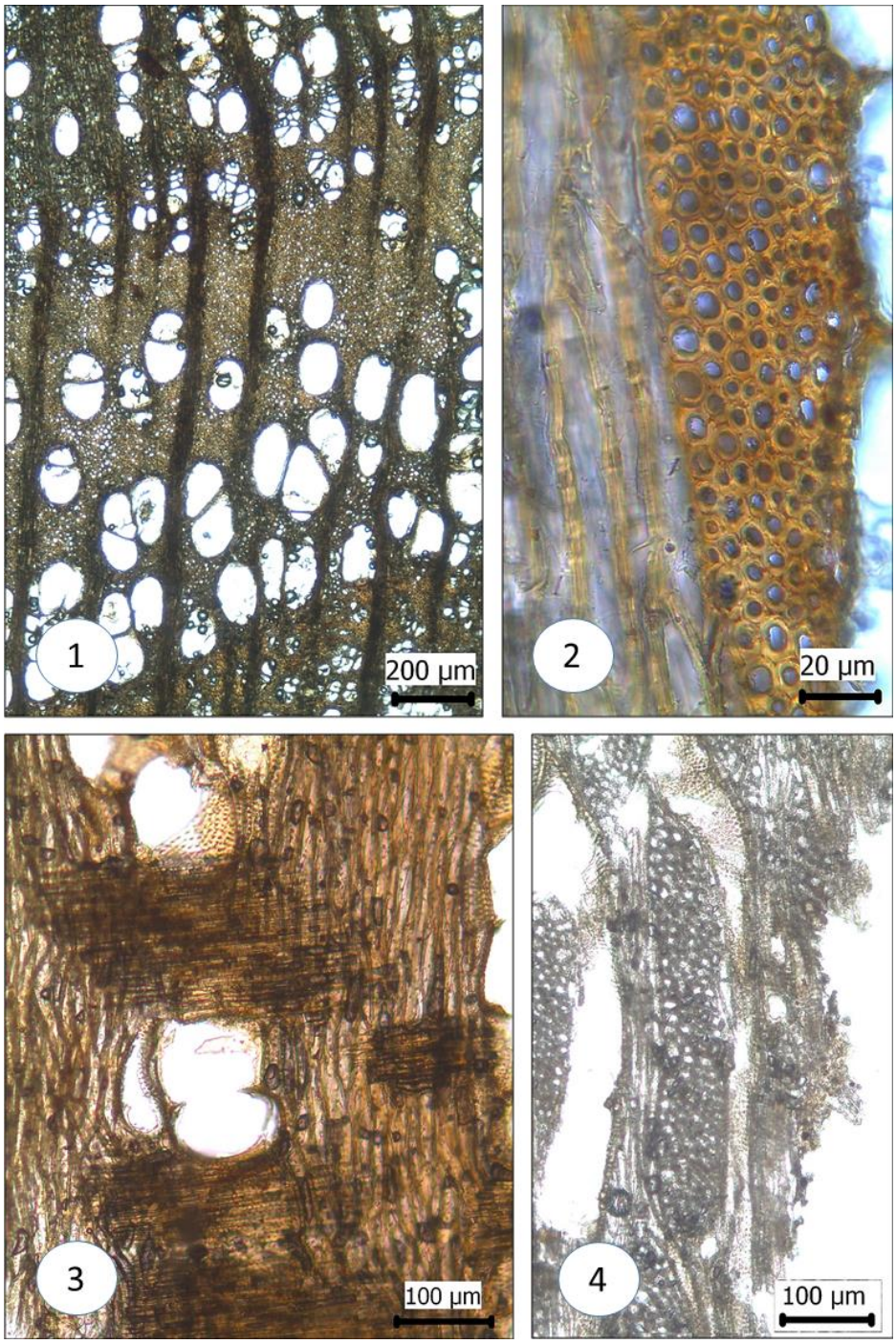


Figure 13. Anatomical features of the mulberry wood.

Poplar (Figure 14): Tree-ring boundary mostly visible, vessel frequency per square mm is 40-100. In some of the described samples, the annual ring boundary is not evident, while in others it is very evident that a region with 7-10 rows of thick-walled fibers at the latewood border is observed. There are no

vessels in this part of tree ring, and therefore the tree-ring boundary is clearly visible. Rays uniseriate, and homocellular. Perforation plates simple. Since the features of the woods fall into poplar tree (Schweingruber, 1988; Akkemik and Yaman, 2012), this type of wood was identified as poplar.

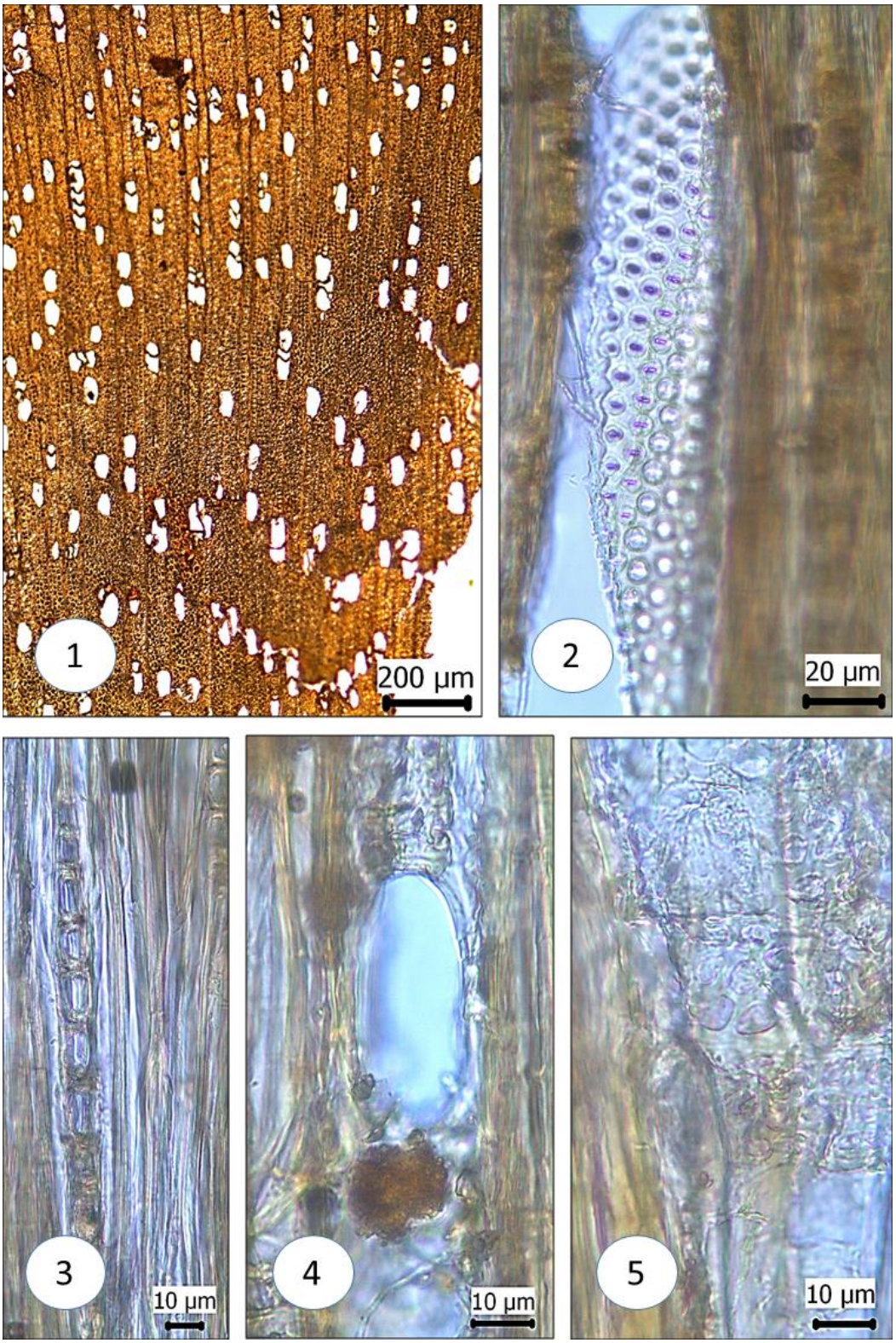


Figure 14. Anatomical features of the poplar wood.

CONCLUSION

With this study, woods used in construction of Büyük Ocak Djemevi, which are the oldest djemevi of Turkey and Küçük Ocak Djemevi, were identified. The most prominent finding in the use of wood was the preference of trees growing naturally in the region.

In the observations made in the villages of Kemaliye, Arapgir and nearby villages, it was observed that the most commonly used tree was poplar. The information obtained from the historical djemevies revealed that the use of poplar was very old and was a preference for a tree from the past to the present. Poplar trees are widely grown in the region.

One of the two most important pillars of Djemevi is the poplar tree, and the other is the ash tree. There are newly used poplar trees for repair purposes, and this observation showed that the use of poplar trees continues from the past to the present.

One of the most common trees in the region is the mulberry tree. The mulberry trees are not native to this region and are grown by the local people. Mulberry tree is also one of the most used trees in the construction of the houses of Kemaliye and Arapgir. This tree is also used in the construction of the djemevies. We can conclude that the use of wood materials in buildings has historical ties.

The ash, wild pear, and white oak group trees are the other forest trees that grow naturally in the region and used in the construction of the djemevies.

One of the poles which were identified in the Büyük Ocak Djemevi is pine. The wood characteristics are very similar to the wood of Scots pine. Pine trees are not natural in Arapgir and it is thought to have been transported by Erzincan-Refahiye along the Euphrates River in the north. The source of this idea is that the pine trees used in the historic houses of Kemaliye have been widely transported in this way.

There are myths about the construction of the Büyük Ocak Djemevi and the trees used. According to the legend, a single cherry tree was used in the construction of Büyük Ocak Djemevi. The tree known as a cherry tree is probably wild cherry or mahalep (Prunus mahalep) and it grows naturally in the region. The absence of cherry trees in the structure of the djemevies can be considered that this tree was not preferred in construction. According to our observations, the most common trees in the vicinity are mulberry, poplar, ash and oak trees and these trees widely used in the other buildings of Arapgir and Kemaliye.

In the region, there are many historical buildings such as historical mansion, historical mosques and djemevies which will be subject to wood analysis. With the new works to be carried out, as in these historic djemevies, which tree material is used in which structure can be determined and the history of the region can be enlightened.

Acknowledgement

We would like to thank Haluk Cömertoğlu, the Mayor of Arapgir, Mesut Kavas, Director of Culture and Social Affairs of the Arapgir Municipality for their kind helps, and Birgül Çevto, who ensures that the first author is aware of these djemevi.

REFERENCES

Akkemik, Ü. ve Yaman, B. 2012. *Wood Anatomy of Eastern Mediterranean Species*. Germany 2012.

Akkemik, Ü. 2015. Woods of Yenikapı Shipwrecks. Ege Yayınları

Aytuğ, B. 1970. Arkeolojik araştırmalar ışığı altında İç Anadolu stebi. *İstanbul Üniversitesi Orman Fakültesi Dergisi.* 20 (A-1): 127-143

Blanchette, R.A. ve E. Simpson, 1992. Soft rot and wood pseudomorphs in an ancientcoffin (700 BC) from Tümülüs MM at Gordion, Turkey. *IAWA Bulletinn.* 13 (2): 201-213.

Doğan, M.U., Akkemik, Ü., Demirer, Ü., Demirtaş, N. 2017. Sıraharmanlar Çiftlik Mezarı: Buluntuları ve özgün mimarisi ile Aphrodisias Nekropolü mezar tipolojisine yeni bir katkı. Cedrus, V: 301-323

Erdin, N. and K. Tırak, 2009. Identification of wooden objects in Ishak Pasha Palace. *İstanbul Üniversitesi Orman Fakültesi Dergisi.* 59 (A-2): 124-137

Fahn, A., E. Werker and P. Baas. 1986. Wood Anatomy and Identification of Trees and Schrubs from Israel and Adjacent Regions. The Israel Academy of Science and Humanities Publication, pp. 221.

IAWA Committee, 2004. IAWA list of microscopic features for softwood identification. Repr. *IAWA Journal.* 25: 1-70.

IAWA Committee. 1989. IAWA List of microscopic features for hardwood identification by an IAWA Committee. E.A. Wheeler, P.Baas&P.E.Gasson (Eds.) IAWA Bull.n.s.10: 219-332

Kayacık, H. and B. Aytuğ, 1968. Gordion Kral Mezarının ağaç malzemesi üzerinde ormancılık yönünden araştırmalar. *İstanbul Üniversitesi Orman Fakültesi Dergisi.* 18 (A-1): 37-54.

Schweingruber, F. H. 1998. Anatomy of European Woods. Paul Haupt.

Şanlı, İ. 1988. Arkeolojik araştırmalarda Ksiloloji'nin önemi ve Anadolu'nun bazı uygarlıklarına ait odun malzemelerinin tanısı. *İstanbul Üniversitesi Orman Fakültesi Dergisi.* 38 (A-2): 99-114.

Şanlı, İ. 1989. Ahşap ve Arkeoloji. *İstanbul Üniversitesi Orman Fakültesi Dergisi.* 39 (A-1): 130-141.

Yaman, B. 2011. Anatomy of archaeological wood charcoals from Yenibademli Mound (Imbros), Western Turkey. *Mediterranean Archaeology and Archaeometry.* 11 (1): 33-39.

Submitted: 26.10.2018 Accepted: 30.01.2019