

Synthetic Stratigraphic Test of Paleolithic Industries in Turkey

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Abstract

So far, many settlement areas of the Paleolithic Age have been discovered in Turkey. While absolute dating results were obtained for some of the settlement areas in question as a result of detailed studies, these could not be obtained for some others. The most significant defect of Turkey in terms of the Paleolithic Age is that it failed to create a chronological table for this Age so far. Although there are small-scale, independent experiments, there is not any detailed table showing the whole Paleolithic chronology. Starting from this, it is very important to place the Paleolithic sites in Turkey into a chronology table. In this study, it was attempted to create an synthetic stratigraphic model considering not only periodically but also the chipped stone tool culture. This chronological table created in sequences following one another, which can occur in any excavation area, provides us the general Paleolithic image of Turkey.

Keywords: paleolithic, stratigraphy, synthetic stratigraphy, chipped stone tool, chronology

1. Introduction

Although there are numerous archaeological settlement areas within the borders of Turkey, it is likely that there are many sites that have not been brought to light yet.

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After periodical distinctions had been made with the outlines during excavation works of nearly a century, expert archaeologists began to work. In the following phases, excavation areas were separated periodically and included in the chronological order by looking at the technological development.

When modern methods come into question, the method which is mostly used by archaeologists and upon which they base their scientific theories is the archaeological dating method. The importance of these time-oriented methods is an undeniable fact especially for the prehistoric times. By means of these methods, it could be revealed that some areas involved settlements belonging to different dates than others even if they had the same archaeological material. Likewise, it could be revealed that similar assemblages were used in different geographies on different dates by looking at the archeological findings.

The results of the archaeological dating methods are quite important in this study because our subject is the Paleolithic Age that covers the longest historical period in archeology. The archaeological settlement areas in the Paleolithic Age have found their place in the chronological sequence in time due to the results obtained from the dating methods. Besides, there are also cites the dating results of which cannot be currently obtained or are controversial. However, the essential point targeted in this study is to create a synthetic stratigraphy by placing all Paleolithic sites which have been discovered on the territory of Turkey until today into an artificial sequence. In this context, the sequence frame consists of sites which have been confirmed to include cultures belonging to the Paleolithic Age as a result of excavation works.

2. Synthetic Stratigraphy Model

The stratigraphic model consists of the sequence applied to the settlements of the Paleolithic Age inspired by the natural stratigraphic structure. When any excavation area is visited, as long as there is no reverse stratigraphy, the stratigraphic order can be distinguished easily. For instance, layers located in the upper part of stratigraphy are of younger ages, and layers located in the lower part are of older ages. It is possible to divide centers included in the sequence we have created based on this idea into two groups in general. The first group centers are the areas the locations of which are clearly evident in the synthetic stratigraphic gradation with the excavation and dating results.

The second group centers appear as the areas which have not been supported by dating results, and therefore, an exact dating result of which cannot be achieved although their excavations have been completed or are in progress. An attempt to place these centers into the most appropriate sequence within the stratigraphic sequence was made according to chipped stone industry characters. Areas with the evaluated excavation works but without sufficient information about dating and chipped stone industrial assemblages are also included in this group. In order to minimize the margin of error, these settlements were placed at the end of that period in the sequence we created, considering to which period these settlements belong in publications.

It is also necessary to clarify an issue within the sequence to be initiated from the oldest settlement area in Turkey. Some of the settlement areas include more than one period and culture. Therefore, layers will firstly be positioned by their dates and then by their cultural characteristics in sequencing to be made.

For instance, the Lower Paleolithic age levels of a settlement area were compared with contemporary areas by period; and the Middle Paleolithic age levels were compared with other areas with similar characteristics. The synthetic stratigraphy created offers us the whole sequencing from the old towards the new just as a stratigraphy encountered in the excavation areas. A unique part of this study is the sequence in which centers without dating results are placed.

3. Chronology Concept

We think it will be useful to address the concept of chronology that constitutes the basis of the study before the classification of the areas which have absolute dating and are placed into specific date ranges by various comparisons.

As a scientific discipline, archaeology is a studying system which requires the explanation of certain details related to the issue that is studied. There is always a need for a date range to place these details into a general framework. Archaeologists apply dating methods in terms of determining the date range in question. The results revealed clearly represent us how old the layer from which the sample, used in dating, is taken is. Certainly, the error value exists in these kinds of dating studies, and these are added to the end of the date using " \pm " (sigma/margin of error) sign. The margin of error can decrease and increase according to the dating method applied.

The method of determining the specific date ranges by these kinds of dating or aging studies we have mentioned so far is evaluated within the "Absolute Chronology" concept. Another concept involved in archeology is called "Relative Chronology." Although there is not an exact dating result in this kind of chronology, matches that occur by means of inferences starting from the similar characteristics are included in it.

The following example can be given to make the subject more understandable; to say "Due to the fact that the chipped stone industry materials of Üçağızlı Cave *Ahmarian* period show close similarities with the chipped stone industry seen in the 16th and 17th layers of Ksar Akil settlement area in the Near East, they can be connected to the same period" is to perform "relative chronology". Therefore, while absolute chronology was used for the settlements with dating results, the relative chronology was used for the settlements without these results within the study we carried out on chronology, that is to say, sequencing.

4. Lower Paleolithic Sites in Turkey in the Synthetic Stratigraphic Model

It is possible to place the lowest layer of the stratigraphic model-based sequence we created to bring a different perspective to Turkey's Paleolithic chronology into the fossil human remains of *Homo erectus* which is the first and single species of our country for now. The initial detailed studies on the finding in question introduced into the literature as Denizli Man¹ were carried out by Prof. John Kappelmann and his team in 2008. The dating results emerged with the thermo luminescence method were included in the records as B.P. 510±0.05 and 330±0.13 thousand years (Kappelmann et al. 2008).

However, the fact that the maximum limit of the dating method applied had the same value with the results revealed led to a number of question marks. This situation led to the re-dating of the finding by different methods in subsequent years.

¹ As a result of the conferences held in Pamukkale and Ankara Universities in 2015, the name of the finding known as "Kocabaş Man" was updated as "Denizli Man".

According to the new dating results, the age range of the massive travertine a deposit containing the fossil human remains appears as B.P. 1.3-1.1 million years (Lebatard et al. 2014). In this case, fossil human remains known as *Denizli Man* exist in the earliest layer of the stratigraphic model.

According to the chronological sequence, a single finding which was discovered in the Aegean region where there is not any systematic excavation work belonging to the Paleolithic Age emerges in the next layer. A single flake which is thought to belong to the Paleolithic Age was discovered during an interdisciplinary study carried out near Kula, Manisa. The detailed information regarding the finding in question was announced to the science world in 2015 (Maddy et al. 2015). Certainly, it is not possible for a single finding to replace the cultural sequence in a settlement area belonging to the Paleolithic Age.

However, the main reason for the inclusion of the finding in the fictional sequence created resulted from the fact that it was discovered as *in situ* and the Pleistocene units where the flake was discovered were supported by the absolute dating results. It is understood that a hard hammer was used in the production of the flake discovered, and it had a visible butt and a clear bulb of percussion. Besides, it is remarked that the possibility of the formation of two negatives of removal that occurred previously at the ventral face of the flake by natural processes is quite low.

As a result of the dating that occurred by $^{40}\text{Ar}/^{39}\text{Ar}$ and pale magnetism methods, the most successful date range determined for the units in which flake was included is B.P. 1.24-1.17 million years (Maddy et al. 2015). Culture belonging to the Paleolithic Age was not mentioned within the information transmitted. However, Maddy's opinions about the single finding mentioned were included in a compilation publication related to the Paleolithic cultures of the Aegean Region, and it was stated that the flake in question could be of *Clactonien* culture.

Furthermore, the presence of other chipped stone items in the region is mentioned (Karakoç, 2015). Maybe, in line with this information, publications related to different types of chipped stone tools in the Aegean Region will increase later on, and it can be possible to make a clearer comment about the Paleolithic Age cultures.

We believe that Dursunlu settlement is located in the layer that should be located on Gediz single finding because it has an industry assemblage in real terms. There is not a stratigraphy like in the archaeological excavation area in Dursunlu, with a lignite deposit. However, *in situ* blocks which were extracted from the upper lignite seam in the settlement and included the chipped stone tools of the Paleolithic Age were supported by absolute dating results. The paleomagnetic dating method was applied to the samples collected by means of core drilling. The blocks in which chipped stone tools were discovered were found to be between B.P. 990-780.000 years (Güleç et al. 2009). Dursunlu chipped stone tool industry is evaluated within Mode 1 technology that does not contain biface (handaxe). Faunal records also support the dating results (Güleç et al. 2003).

The layer located on Dursunlu settlement consists of Şehremuz Tepe area which is guessingly placed between specific dates according to types and typologies of chipped stone tools. Having important archaeological studies in our country, Minzoni-Déroche has a number of studies related to the area including Şehremuz Tepe. Chronology was created by the researcher for *Acheuléen* culture which was determined according to the types of chipped stone tools within the Quaternary period conglomerate formation (Minzoni-Déroche, 1988, 1989). According to these results, Şehremuz Tepe settlement is located between B.P. 700-300.000 years².

² The abovementioned chronology was taken into consideration in a similar publication in which the first test of the Paleolithic Age chronology of Turkey was made, that constitutes the main purpose of this study. Besides, it was remarked that chipped stone tool industry discovered in survey carried out in Dicle watershed showed similarities with Euphrates

The layer on Şehremuz Tepe consists of the Lower Paleolithic period levels of Kaletepe Deresi 3 settlement which is in Central Anatolia. Although the date that comes to the forefront for this settlement appears to be B.P. 1 million years in general, the absolute dating results give us the age of the rhyolite bedrock rather than the earliest Paleolithic Age levels (Balkan-Atlı et al. 2007). Apart from the date of the rhyolite bedrock, the Paleolithic period fillings supported by the absolute dating results belong to the Middle Paleolithic period.

Therefore, the levels of the Lower Paleolithic period in Kaletepe Deresi 3 settlement essentially lack the absolute dating results (Balkan-Atlı et al. 2008). In the evaluations made depending on the date of the rhyolite bedrock, these levels were mentioned to be B.P. 500-600.000 years or earlier dated (Balkan-Atlı et al. 2006). The dominance of *Acheuléen* culture consisting of multifaceted, pebble tools, bifaces (handaxes) and cleavers comes into question at these levels (Balkan-Atlı et al. 2008).

The Lower Paleolithic period levels of Karain Cave Chamber E with still-continuing excavations at the present time are found in the layer on the Lower Paleolithic period levels of Kaletepe Deresi 3 settlement. There are various estimated datings related to the Lower Paleolithic period sequence of the cave the absolute dating results of which will be submitted for publication in the near future.

The most detailed estimations were demonstrated in the result of overall evaluation which was made regarding the Lower Paleolithic period stratigraphy of Chamber E of Karain Cave in 1995 and 1998. The Paleolithic period cultures which were discovered as a result of the association of the travertine layers in the cave with interglacial periods were matched with different dates.

watershed materials including Şehremuz Tepe, therefore it was stated that the settlement should be located on Dursunlu site (see. Taşkıran 2015)

According to these estimates, the Lower Paleolithic period sequence of the cave is between B.P. 367-440.000 years (Otte et al. 1999). Although the Vth geological unit that meets the dates in question is considered to be represented only by the Lower Paleolithic cultures with the flake, the presence of *Acheuléen* culture was also proven by means of the biface (handaxe) discovered in 2007. The level at which biface (handaxe) was found, is estimated to be older dated than B.P. 400.000 years (Yalçınkaya et al. 2009). At the moment there is not an absolute dating result for these levels. Nevertheless, the most frequently encountered date while describing the levels of the Lower Paleolithic period of the cave is B.P. 500.000 years. There is not an opinion against these estimations made based on typological analyses.

Yarımburgaz Cave constitutes the last layer of the Lower Paleolithic period in the synthetic stratigraphic sequence. The earliest dates of the Paleolithic Age give the result of B.P. 270-390±40-60. The use of the biface (handaxe) and *levallois* technique is not observed in the settlement. The chipped stone industry consists of chopper/chopping tool types and denticulated sharp-edged flakes (Arsebük, 1998).

When the synthetic stratigraphic sequence of the Lower Paleolithic period is analyzed within the general framework, for instance, the question of why Kaletepe Deresi 3 Lower Paleolithic period is located on Dursunlu layer may come to mind. The earliest levels of Kaletepe Deresi 3 settlement may include a date which is very close to the age of the rhyolite bedrock. In addition to this, there is also a possibility that dates show contemporary with the middle or late phase of the Lower Paleolithic period. Moreover, the absolute dating results of Dursunlu settlement are also available. When it is considered that Kaletepe Deresi 3 Lower Paleolithic period levels are dated to B.P. 600.000 years or earlier, the fact that it is included in the same sequence with Şehremuz Tepe or Dursunlu settlement, in other words, it includes contemporaneousness dates is one of the possibilities.

However, we think that the fact that it appears on an earlier date than Dursunlu settlement is not a sensible approach at least in terms of the typology of chipped stone tools.

5. Middle Paleolithic Sites in Turkey in Synthetic Stratigraphic Model

The layer located on Yarımburgaz Cave in the synthetic stratigraphic sequence is the levels of the Middle Paleolithic *Charentien* period of Karain Cave Chamber E. The estimated dating made according to the interglacial periods showed B.P. 297-347.000 years. Chipped stone assemblage consists of denticulated, notched and side scrapers produced from thick blanks. Some typological features are similar with *Acheulio-Yabrudian* culture (Otte et al. 1995).

Kaletepe Deresi 3 Middle Paleolithic period levels constitute the layer on the *Charentien* period levels of Chamber E in Karain Cave. The deposits belonging to the Middle Paleolithic period which are less complex compared to the Lower Paleolithic period are seen in the first four levels in the settlement. The first two levels give newer dates than B.P. 160.000 years. The last two levels belonging to the Middle Paleolithic period were connected to B.P. 160.000 years or an earlier time period as they remained under tephra layers. It was indicated that these levels could take back until B.P. 200.000 years (Balkan-Atlı et al. 2008). Indeed, the volcanic tephtras including the Middle Paleolithic period layers have been re-dated in recent years. The results corresponding to the above-mentioned comments were determined to be B.P. 190-200.000 years (Schmitt et al. 2011).

The Middle Paleolithic period (*Karain Type Moustérien*) levels of Chamber E in Karain Cave are located in the layer on Kaletepe Deresi 3 Middle Paleolithic period levels. In fact, there are deposits belonging to the Middle Paleolithic period in Chamber E and B of the cave.

However, at the moment, only the deposits found in Chamber E have been supported by the absolute dating results. The earliest date detected at the Middle Paleolithic period levels of Chamber E is B.P. 160 ± 8.7 . Dates regularly ranging up to B.P. 60.000 years have been obtained (Rink et al. 1994; Çetin & Özer 1994). In the interpretations made within the scope of relative comparisons, it was mentioned that the dating earlier than 40.000 years of these levels is within possibilities (Otte et al. 1999). The layer after the Middle Paleolithic period levels of Chamber E in Karain Cave, or which is required to be quite likely found in the same sequence is the Middle Paleolithic period levels of Chamber B in Karain Cave.

There is not any absolute dating study for the Middle Paleolithic period sequence of Chamber B. However, the sediment samples taken from *Karain type Moustérien* levels of Chambers E and B in Karain Cave were compared with each other, and the analysis results indicated that the earliest deposition time of Chamber B, with its current form, is B.P. 200.000 years and the latest one is B.P. 160.000 years (Yaman, 2015). In addition to the analyses, the chipped stone industry data are largely overlapped with the Middle Paleolithic period levels of Chamber E (Kartal, 2012).

Consequently, significant similarities draw the attention between the Middle Paleolithic period levels of Chambers B and E the Karain Cave. Based on these criteria, it is possible that two levels in question take place in the same layer, same sequence. There are Tıkalı, Kanal, Merdivenli, Üçağızlı II and İkiyağızlı Caves that are considered to belong to this period in the layer located on the Middle Paleolithic period levels of Chamber B of Karain Cave. There are not absolute dating results in all of these settlements. In connection with the dating part, scientists carrying out excavation works in these areas took the Middle Paleolithic period chronology of Levant Region as a basis because of both proximity to the region and chipped stone industry features.

For instance, the lithic industry assemblage of Merdivenli Cave was associated with the IInd and IIIrd phases of Levant Region. Üçağzlı II Cave, which is the other site containing the characteristic chipped stone tool types of the Middle Paleolithic period was compared with *Moustérien* cultures of Levant Region, and numerically similar results were obtained. It is stated that it corresponds to Tabun B and C phases of İkiğzlı Cave (Baykara & Güleç, 2012).

The dominance of *levallois* technique and *Moustérien* culture draws attention within chipped stone industries of Tıkalı and Kanal Caves which were intensively investigated in excavation works taking place in the early period (1940-1970). In the excavation reports of Tıkalı Cave which were certified as a result of the investigations carried out in the periods mentioned, it was reported that the lithic industry showed proximity with the samples observed in Europe (France), and Kanal Cave chipped stone industry showed proximity with the samples observed in Europe and Near East (Şenyürek 1959; Bostancı 1967).

However, the Paleolithic Age chronology of Anatolia and its surroundings on these dates was quite different from today's view. Therefore, some of the sites located in distant geographies could be compared with settlement areas in Anatolia during the period of time in which the Paleolithic Age excavation works were carried out. Today, when we scan the studies of the Paleolithic Age, the chipped stone industry detected in the early period excavation works is often re-examined according to the current chronology to set up a substructure for a different study to be conducted within the period.

In this context, the chipped stone industry analyses of Tıkalı and Merdivenli Caves were performed again within a study conducted. Previous results did not change too much, the intensive use of the *levallois* technique and the characteristics similar to Levant Region were sorted (Baykara, 2013).

Scientists performing excavation works related to the Middle Paleolithic period of Anatolia did not state any opinion against the comments made for these settlements. The most important determination encountered for this period is the fact that the Middle Paleolithic settlement properties in Hatay province differ from the Middle Paleolithic period *Moustérien* culture of Karain Cave (Kuhn 2002; Yalçınkaya & Özçelik 2012).

It is understood that Levant Region was generally taken as a reference to the settlements without absolute dating results belonging to the Middle Paleolithic period. *Moustérien* cultures of Levant Region were shaped by the stratigraphy of Tabun Cave. Many studies have been carried out from the past to present concerning the cultural classification by taking into account the investigations in this area. As a result of techno-typological studies and detailed analyses of the layers, Levanten *Moustérien* type culture complexes were named as Tabun D, Tabun C, and Tabun B industries (Goren-Inbar & Belfer Cohen 1998).

Among them, Tabun D is between B.P. 180-260.000 (OIS 7-8) years, Tabun C is between B.P. 170-92.000 (OIS 5) years, and Tabun B is between B.P. 70/60-45.000 years (Bar-Yosef & Meignen, 2001). As it is understood from the publications, it can be seen that the settlements in Hatay province generally comply with Tabun C and B phases of Levant Region. Therefore, these areas can be placed between B.P. 170.000 years which is the starting date of Tabun C phase and B.P. 45.000 years which is the ending date of phase B.

We believe that giving place to these settlements within a wide date range as a whole is more accurate although they can be separated as early or late Middle Paleolithic period among themselves.

When we think of the gradation in the synthetic stratigraphic sequence, according to the comparisons to which we have contributed even if just a bit, although the caves located in Hatay province and Karain Cave E and B *Karain type Moustérien* levels show different chipped stone industry characters, they show almost contemporary dates. It is possible to produce many questions and results based on this table. However, all of these settlements were located in an upper layer of the Middle Paleolithic period levels of Karain Cave and Kaletepe Deresi 3 because the criteria we prioritized in gradation are the absolute dating results.

Kurbanğa Cave constitutes the last Middle Paleolithic period layer of the synthetic stratigraphic sequence. A lot of information could not be achieved about the absolute dating and chipped stone assemblage in the settlement. Although chipped stone tools belonging to the Middle Paleolithic period were obtained, it is unclear from which level these tools were extracted. However, they were included in the list of caves that contained the items belonging to the Middle Paleolithic period within the stratigraphic position (Yalçinkaya & Özçelik, 2012). Consequently, it is certain that this cave belongs to the Middle Paleolithic period, but it has become difficult to make an interpretation due to some deficiencies. Therefore, it formed the last layer in the Middle Paleolithic period sequence.

6. Upper Paleolithic Sites in Turkey in Synthetic Stratigraphic Model

The 'Early Upper Paleolithic' levels (F, G, H, I) of Üçağzlı Cave which essentially show a Middle-Upper Paleolithic period transition are located in the first layer of the synthetic stratigraphic sequence of the Upper Paleolithic period. The earliest dates seen in these levels are B.P. 41.400 and 40.200. Besides, the dates that are quite close to each other such as B.P. 39.700, 39.400 and 39.200 were also achieved (Kuhn et al., 2009).

Scientists who have carried out excavation works here for many years stated that Üçağzlı Cave is directly affected by Levant Region, and this settlement should be evaluated as an extension of this area (Baykara & Güleç, 2014). Therefore, the word “Öncül” which is the Turkish equivalent of the term “Initial” used for the Middle-Upper Paleolithic period transition industries in the Near East was preferred in defining the levels corresponding to the transition industries of the cave.

The chipped stone industry at the levels showing transition industry features is distinguished by the concurrent use of *levallois* uni-polar and bipolar protoprismatic cores and blade production. *Chamfered* tools, which are the determinative tools of Levant Region transition industries, are also seen within the chipped stone assemblage. It was mentioned that the *levallois* technology used in this period was different from the technology used in Hatay Middle Paleolithic period settlements (Baykara & Güleç, 2014).

Karain Cave Chamber B P.III level showing a Middle-Upper Paleolithic period transition is found in the layer which is located on the Early Upper Paleolithic levels of Üçağzlı Cave. According to the results of absolute dating, the date of P.III level is B.P. 39.630. Lithic industry analyses showed that a different table was encountered compared to Üçağzlı Cave in the distribution of chipped stone tools and tool diversity detected at this level (Kartal, 2012). It was stated that the lithic industry was accompanied by bone tools and ornaments, even if just a bit, at the transition levels of Üçağzlı Cave and a similar situation was not observed in Karain Cave.

The fact that the Upper Paleolithic period-specific tools observed at the transition period level of Karain Cave were not produced with the Middle Paleolithic period technology is another distinguishing feature.

Finally, the chipped stone industry items that indicate the Middle Paleolithic period were determined to be in a superior position in number compared to the determinative tool types of the Upper Paleolithic period (Kartal, 2012). In conclusion, there are two settlement areas in Turkey which are contemporary in the historical sense but different from each other in terms of chipped stone industry traditions, showing the Middle-Upper Paleolithic period transition.

The Upper Paleolithic period sequences of Kanal and Merdivenli Caves are located in the layer on P.III level of Chamber B in Karain Cave. Kanal Cave was connected to *Aurignacien* culture as a result of the studies performed in the early periods (Bostancı, 1967). The lithic industry of the settlement was examined again in the forthcoming years. It was concluded in accordance with the analyses performed that Kanal Cave is a settlement showing the Middle-Upper Paleolithic period transition features according to today's terminology (Kuhn et al. 1999). In our country, the phase known as the "Initial Upper Paleolithic" was defined as *Emiran* industry in the periods in which the Paleolithic Age excavations were not very common (Gilead, 1991).

Indicating that interpretations were made depending on the absence of *Emireh* points, one of the characteristics tools of *Emiran* industry, in the region, Prof. Dr. Steven Kuhn actually determines that these points did not spread over a wide geographic area. He likens the chipped stone assemblage to the transition period industries located in the south of Levant Region (Kuhn et al. 1999). Starting from these comments, Üçağızlı Cave transition period and Kanal Cave Upper Paleolithic period levels can be placed in the same date range. There is also the possibility that Kanal Cave is seen on an earlier date than Üçağızlı Cave. The earliest absolute dated settlement representing the transition period in Levant Region, which is a reference point for Hatay region is Bocker Tachtit (Ist Layer) settlement with B.P. 47.000 years (Gilead, 1991).

With the simplest logic, the possibility of dating to older times than B.P. 47.000 years decreases when we consider that Kanal Cave is present on an earlier date than Üçağzlı Cave. When we put aside the assumptions, this settlement has taken its place in an upper layer of Üçağzlı and Karain Caves due to the priority of the dating results.

It has been associated with *Aurignacien* culture as in the examples of Merdivenli and Kanal Cave. The chipped stone industrial properties of these two caves are quite similar to each other (Minzoni-Déroche, 1993). The main reason that we have placed these two settlements on the levels reflecting the absolute dated transition period is due to the presence of tool types which are the reminiscent of the Middle Paleolithic period, even if just a bit, in addition to the blade industry seen in the Upper Paleolithic period levels.

The C, E, and C/D levels remaining between Üçağzlı Cave Middle-Upper Paleolithic period transition and *Ahmarian* period sequence constitute an upper layer of Merdivenli and Kanal Caves in the sequence ranking. These levels were sometimes evaluated within the *Ahmarian* period stratification. However, small differences between dating and chipped stone industry were considered as the levels independent of each other because a chronological study was carried out.

The dates obtained from level E appear as B.P. 37.870±920 and B.P. 36.560±790. At these levels dominated by blade industry, the tool butts and percussion techniques applied to the cores vary according to other levels (Güleç et al. 2012). *Ahmarian* period levels of the same settlement are present in the next layer in the chronological order. The dating results of this level indicate the B.P. 34-29.000 year range.

These levels present in Üçağızlı Cave have the same characteristics with the sites reflecting the *Ahmarian* period tradition seen in Levant Region (Kebara Cave Unit IV-III, Ksar Akil XX-XIV layers, Boker A, Tor Sadaf), and are among the distinguishing areas of the period (Meignen, 2012).

The Upper Paleolithic period levels of Chamber B in Karain Cave are located in the layer on the *Ahmarian* period levels of Üçağızlı Cave. P.II level where the Upper Paleolithic period sequence is seen gives the dates of B.P. 31.280 and B.P. 28.100. The dates of Karain Cave P.II and Üçağızlı Cave *Ahmarian* period levels are also seen in the contemporary date range, as in the Middle-Upper Paleolithic transition. However, Karain Cave is in proximity with *Aurignacien* culture seen in Europe and some industries found in the regions of the Caucasus and Taurus-Zagros (Özçelik, 2015).

Yarımburgaz Cave (Upper Chamber) level 8 appears in the layer on the Upper Paleolithic period level of Chamber B in Karain Cave. The date of this level is B.P. 24.150±240. The lithic industry consists of some *levallois* flakes and side scrapers (Arsebük et al. 2010). Küllünün Cave, Yağlak Cave, Karataş Rock Shelter and Kapalın settlements where a lot of information could not be obtained about the chipped stone assemblage as well as the absolute dating results and which are considered to belong to the Upper Paleolithic period are gathered in an upper layer of Yarımburgaz Cave.

Although the possibility of being in the wrong place in sequencing is high, we would like to inform that we are aware of these areas, but the lithic tool types discovered in some of the settlements are evaluated within the Epi-paleolithic period today. It is necessary to re-examine the chipped stone findings in all of these areas to clarify this and similar cases.

7. Epi-paleolithic Sites in Turkey in Synthetic Stratigraphic Model

Three settlement areas share the layer on the settlements which are thought to belong to the Upper Paleolithic period. These are the early Epi-paleolithic period levels of Chamber B in Karain Cave, Ist Unit of Öküzini Cave and Üçağzılı Cave Epi-paleolithic period sequence.

The earliest Epi-paleolithic period dates in Turkey come from P.I.1, P.I.2 and P.I.3 units of Chamber B in Karain Cave. The earliest dates according to the lower phases of the units were determined to be B.P. 20.600-19.100 in P.I.3, B.P. 20.500-19.900 in P.I.2 and B.P. 17.360-16.990 in P.I.1 (Özçelik, 2011). According to the chronological sequence, when we look at the other area which is present in the same time period with Karain Cave, we see Öküzini Cave, which is the first reference point to be compared when any archaeological finding, which is considered to belong to the Epi-paleolithic period, is discovered.

Because Öküzini Cave is a cave showing cultural development from the beginning of the Epi-paleolithic period up to the late periods. An Epi-paleolithic site without an exact date can be placed into specific date ranges according to the typological development seen in Öküzini stratigraphy due to the units supported by absolute dating results. For this reason, the stratigraphy of the settlement was not examined as a whole but according to the archaeological units divided into sub-phases.

The dating results of Öküzini Ist archaeological unit indicate the B.C. 17.500-14.500 date range (Kartal, 2009). The dates and the chipped stone industry characteristics of these two areas located quite closely match up with each other.

Üçağzılı Cave is the last settlement having simultaneous historical ranges with the early Epi-paleolithic period levels of Karain and Öküzini Caves. The dating made to the *patella* type seashell which was discovered at the levels belonging to the Epi-paleolithic period gave the result of B.P. 17.530 ± 140 . It was mentioned that Üçağzılı Cave had similar characteristics with Öküzini Cave (Kuhn, 2002).

Öküzini Cave IInd and IIIrd archaeological units, the late Epi-paleolithic period levels of Chamber B of Karain Cave, Pınarbaşı Area B Epi-paleolithic period levels, Direkli Cave and Körtik Tepe Epi-paleolithic period levels which were supported by dating studies constitute an upper layer of the aforementioned settlement levels. Öküzini IInd and IIIrd archaeological units gave the date of B.C. 14.500-10.000, and the late Epi-paleolithic period levels of Chamber B of Karain Cave gave the date of B.C. 16.000-14.000. Pınarbaşı Area B appears with the result of B.P. 13.427-12.897. Essentially, the dates of Graves 13 and 14 located in Pınarbaşı Area B show an earlier date.

However, it was determined that the large part of the Epi-paleolithic period sequence was deposited after these graves (Baird et al. 2013). The other sites located in the same sequence are Öküzini Cave IIIrd archaeological unit (B.C. 13/12.000-10.000) and Direkli Cave. Direkli Cave gave the dates of B.C. 10.730 ± 42 - 8.915 ± 149 . It is seen that the lithic industry assemblage located in the cave firstly showed proximity with Levant Region and was associated with some tools discovered in Öküzini Cave.

In addition to this, it is stated that the absolute dating results should include an earlier date due to some characteristics seen within the chipped stone industry (Erek, 2012). At this point, there is an important determination to which we want to draw attention related to raw material sources.

The source analysis of the obsidian part taken from a bladelet core obtained from the levels forming the IInd archaeological unit of Öküzini Cave indicated that it was Central Anatolia-Nenezi Mountain originated (Carter et al. 2011). Although still there is not the source analysis of the obsidian samples located in contemporary Pınarbaşı Area B with this level, it is stated that the parts may be Göllüdağ, or Nenezi Mountain originated in the visual comparisons (Baird et al. 2013).

There are blanks and production waste of Göllüdağ obsidians in Direkli Cave (Erek, 2012). The presence of these samples shows us that there is a relationship between the regions where the settlements are located and the obsidian sources in Central Anatolia. The last level seen within the same layer with these sites includes the Epi-paleolithic period sequence of Körtik Tepe. The earliest dates within this sequence come from trenches with B.P. 10.450 (Benz et al. 2011).

The sites located in the layer on the aforementioned areas are generally composed of settlements without dating results. For Tekeköy A Cave, which is one of these settlements, the emphasis was laid on the possibility that Anatolia may belong to the early Epi-paleolithic period (Kartal, 2009). Therefore, the possibility to place this settlement between B.P. 17.500-14.500 which is the date of the Ist archaeological unit of Öküzini Cave increases. Other areas which are considered to be associated with the archaeological units of Öküzini Cave are Beldibi and Belbaşı Rock Shelters.

The lithic industry information of these settlements learned from publications was matched with Öküzini Cave units. According to these matchings, it was stated that Beldibi D1 and Belbaşı III levels showed proximity with Öküzini Ist archaeological unit, and Belbaşı IInd level showed proximity with Öküzini Cave IInd archaeological unit.

When other comparisons are analyzed, it is seen that Beldibi C1, C2 levels, and Belbaşı Ist layer were associated with Öküzini Cave IIIrd archaeological unit and Beldibi A2, B1, B2 levels and the top layers of Belbaşı Rock Shelter were associated with Öküzini Cave IVth archaeological unit (Kartal, 2009).

Finally, the dating results of Yarımburgaz Cave (Upper Chamber) 7a and 7b levels which are considered to contain the Epi-paleolithic period sequence appear as B.P. 7640±90, 9190±100 and 10.000±890 (Arsebük et al. 2010). However, no adequate finding which is helpful to make typological dating was encountered.

In excavation studies that could not be placed into any date range for this period and were carried out in the early period, the settlements defined as the Epi-paleolithic period were included in the latest layer in the synthetic stratigraphic sequence. These settlements can be listed as Baradız Open Air Site, Belpınar Karain, Biris Mezarlığı, Söğüt Tarlası, Kızılın Cave, Çarkini Cave and Şarklı (Keber) Caves.

8. Conclusions

In our country, archaeological excavations which were limited in the first half of the twentieth century increased in number in the progressive phases. Besides, areas with a great importance not only for Turkey but also for the world of archeology were discovered. The implementation and finalization of archaeological excavation works are directly proportional to the possibilities of the period in which the studies are carried out. For instance, the absence of absolute dating results in an area where an excavation work was carried out in the 1950s is not surprising.

Moreover, the fact that zoo archaeology, archaeobotany and similar auxiliary branches of science lack of data can be accepted as normal. However, there are also excavation works that did not make use of the opportunities of the time.

With the passing of time, we sadly determined that some of the excavation works performed in our country in the late twentieth century had no absolute dating results. It is very difficult to do something retrospectively about the dating result for an area the excavation of which was performed and completed many years ago. However, the fact that an excavation work with the opportunities of the modern world does not make use of these opportunities is not understandable. Because exceptional circumstances may appear in an archaeological settlement area, no matter how well chipped stone industry and accordingly assemblages are defined.

For instance, when the chipped stone cultural tradition is taken into account, the pebble tool culture of Yarımburgaz Cave will probably be included in a table without dating results as the oldest culture. This potential table to emerge will lead us to making a mistake considering the present results. Moreover, there are also situations in which the present result is approached with suspicion although there are absolute dating results. Taking any side in regard to such issues is not in question. The data available have been assessed as they are. For example, the first dating made regarding the *Homo Erectus* fossil skull piece discovered in Denizli indicated B.P. 500.000 years.

However, we see that it was dated to 700.000 years earlier with a different dating method in later years, and it was corrected as B.P. 1.2 million years. Starting from this point, it can be considered that some of the data in settlement areas with dating results in our country may be incorrect. However, it is necessary to perform these studies again to be able to say that dating is incorrect because scientific results are used in the chronology.

For settlements without absolute dating results, how important the comparison made with country-wide and its surroundings is has been revealed.

Although the typological analyses of the chipped stone cultures do not give a clear result historically, they can be placed into a certain period range at least by looking at the present examples. Therefore, the most important studies required to be carried out in an excavation area are the absolute dating results and comparative typological analyses. Some findings of the scientists who devoted their life to archaeological studies many years ago only remained as a name because they lacked these two results we have mentioned. Accordingly, probably they were not in their actual place in the ranking in the synthetic stratigraphic sequence.

While evaluating the results of the study we carried out, a new sequencing from the old to the by period was created as in synthetic stratigraphic test.

8.1. Lower Paleolithic Period

Our country is located nearly at a key point in terms of the settlement areas belonging to the Lower Paleolithic period. However, some problems related to the sites of this period have come to the forefront as a result of our study. For instance, although absolute dating studies are successful, it is too early to comment on the flake discovered in Gediz. Nevertheless, expecting an increase in the studies in the region seems to be a more accurate approach.

Another situation is that, as we mentioned before, the culture that must be present at the bottom under normal conditions is the "*pebble tool culture*" as it is known when we consider the sequence of Paleolithic cultures. Although the pebble tool culture is observed in Yarımburgaz Cave, it is seen that the Lower Paleolithic period levels of the settlement are ranked as the sixth in the synthetic sequence.

When the examples of the pebble tool culture in Europe are analyzed, quite old dates are given such as Pirro Nord located in southern Italy as B.P. 1.4 million years, La Vallonet cave located near the city of Nice in France as B.P. 1 million years, The Barranco León and Fuente Nueva (Spain) as B.P. 1.2 million years and Sima del Elefante located in Atapuerca Sierra as B.P. 1.13 ± 0.16 and 1.22 ± 0.14 (De Lumley et al. 2009). When we look at the examples in the Near East, while Yiron settlement shows the old date of B.P. 2.4 million years, Erq el-Ahmar was dated by B.P. 2-1.8 million years (Shea, 2013a).

Yarımburgaz Cave indicates quite a younger date with the date of B.P. 400.000 years for the pebble tool culture. Almost all of the core tool samples in this cave consist of chopper/chopping tools and they have similar characteristics with the samples outside Turkey. Although the absolute dating result shows B.P. 400.000 years, it is likely to contain an earlier date when the settlement is considered in terms of the chipped stone industry assemblage.

As it can be seen in the examples, it is understood that the pebble tool cultures seen in the regions close to Turkey include approximately B.P. 1 million years ago or earlier dates, much older than B.P. 400.000 years. In fact, it is mentioned that the upper limit of the settlement date could date back to B.P. 400.000 and the lower limit could date back to 1 million years starting from tool types here, as a result of the excavation works carried out during the Özdoğan period in 1986 (Özdoğan, 1988). However, it appeared that the situation was much more different than thought in line with the absolute dating results. The question of “why were people in Yarımburgaz Cave in which there is an unconformity between the absolute dating results and lithic industry characteristics still using the chopper/chopping tools in B.P. 400.000 years in a region where more advanced technologies were known?” is one of the most important issues waiting to be answered.

An interesting situation similar to Yarımburgaz example was encountered in Kaletepe Deresi 3 area which is another settlement area belonging to the Lower Paleolithic period. For the Lower Paleolithic period levels of Kaletepe Deresi 3 settlement without a clear date, it is stated that, in the continuation of an assemblage procuding advanced bifaces (handaxes) the raw material of which was obsidian, there was a more primitive assemblage in the same settlement in technological terms and an obvious difference was detected in choosing raw materials (Balkan-Atlı et al. 2008). In other words, the chipped stone industry characteristics indicate a further layer compared to the levels after it and an earlier time period in the chronological sequence.

Although some settlements of the Lower Paleolithic period have one or two dating results, there is no satisfactory information on the chipped stone industry. On the other hand, a settlement the lithic industry analyses of which were performed very well appears to lack absolute dating results. Perhaps the only settlement that can overcome this deficiency, for now, is the Lower Paleolithic period level of Chamber E of Karain Cave where excavation works are still going on.

According to synthetic stratigraphic model, there are hiatuses without any information in terms of culture and history in our country despite the areas that could be placed into a specific date range by the absolute and relative dating method. The first of these corresponds to the period between B.P. 1.1 million years and 990.000 years. Significant settlement areas were discovered in these historical ranges in Europe and Near East. Sites such as La Vallonet, La Sima del Elefante, Ca'Belvedere di Montepoggiolo in Europe and Bizat Ruhama (C1 level) in the Near East are some of those (Shea 2013a). Another historical gap seen within the Lower Paleolithic period corresponds to the period between B.P. 780-700.000 years.

It is possible to show settlements such as Isernia la Pineta (5th level) in Europe and Gesher Benot Ya'acov, Evron (4th Unit) and Latamne in the Near East in these date ranges as examples outside Turkey (Monnier, 2006; Shea, 2013a).

8.2. Middle Paleolithic Period

There are only two sites with absolute dating results belonging to the Middle Paleolithic period in Turkey. Chamber E of Karain Cave, one of these settlements, has the characteristics of being a center dominating the period. The earliest date obtained from the Middle Paleolithic period levels of Chamber E in Karain Cave appears to be B.P. 160.000 years (Rink et al. 1994, Table.2). Apart from the absolute dating results, various chronological estimations were also conducted as a result of the comparison of travertine layers in the cave with the phases including interglacial periods.

According to the relative dating, the consistency starting from the *Charentien* levels continues until *Moustérien* levels (Otte et al. 1999). The other levels of Karain Cave containing the Middle Paleolithic period culture layers are located in chamber B. Although the Middle Paleolithic period levels of Chamber B do not have absolute dating results, it is quite likely that they are present in the date ranges identical with chamber E levels due to the studies carried out in recent years.

Kaletepe Deresi 3 settlement is the second area with an absolute date within the Middle Paleolithic period. The earliest Middle Paleolithic period levels of the settlement date back to B.P. 200-190.000 years with the re-dating of tephra samples. The dates of the settlements of the Middle Paleolithic period exhibit a more regular appearance chronologically when compared to other periods.

In this context, we believe it will be useful to address some issues related to climatic changes experienced in the past. Settlements' dates, cultures and the equivalents consisting of oxygen isotope phases can be seen in the table created based on the stratigraphic model in which Paleolithic settlements are ranged. However, the oxygen isotope phase records in question were essentially shaped by the glacial period and interglacial periods in Europe. In our country, studies that have been carried out on the Pleistocene epoch glaciers and paleoclimate changes especially in the last 15 years contain important information especially for us, archaeologists.

While these studies were carried out by the relative comparison method in the middle of the twentieth century, they have become to be applicable to a variety of glacial deposits in recent years with cosmogenic surface dating methods. Thus, records on the glaciations and interglacial phases in Anatolia in the Pleistocene period can be achieved (Sarıkaya, 2012). However, studies conducted so far generally belong to the Late Pleistocene epoch. The glacial records related to this period were classified in a very detailed manner (For detailed information see. Sarıkaya, 2012; Sarıkaya & Çiner, 2015). However, the Middle Pleistocene glacial records which are essential for the chronological sequence we have created do not have the clear appearance as in the late Pleistocene epoch. Therefore, much more studies regarding the Middle Pleistocene glaciations are needed to make a realistic comparison.

The first historical gap which is outstanding within the Middle Paleolithic period corresponds to the period between B.P. 297-251.000 years. Although there is not any absolute dated settlement or layer placed into these years in Turkey, Orgnac 3 (IInd and VIth level), Cagny-l'Épinette (H level) and Maastricht Bélvédère in Europe can be listed as some of the important settlements seen in these date ranges (Monnier, 2006). Holon D, Zuttiyeh, Umm Qafata (D-E), Tabun (IX-X) and Berekhat Ram in the Near East are among the centers giving an older date than B.P. 200.000 years (Shea, 2013a).

8.3. Upper Paleolithic Period

When it comes to the Upper Paleolithic period, the absence of absolute dating results in settlements where excavation works were carried out especially between the years of 1940-1970 and the lack of data enabling relative chronology are the most common situations we encounter. These excavation sites we have mentioned lack absolute dating methods due to both time and impossibilities. Scientists who conducted excavations in these areas resorted to making a comparison with the results obtained from excavations that were performed previously by them. The fact that old and new studies are not overlapped with each other has led to new problems. For instance, it was mentioned in excavation reports that Yağlak Cave showed similar characteristics with Karain, Öküzini and Direkli Caves in terms of chipped stone tool types (Kökten, 1962). The excavations of these three caves which were compared within new studies were restarted.

What is known about the areas in question were updated or completely changed by both dating and lithic industry analyses. There is not a new study in Yağlak Cave as in the areas compared. There is not enough information about the chipped stone tool types obtained from within the Paleolithic period sequence of Kapalıin Cave, which is another settlement considered to belong to the Upper Paleolithic period. However, the findings obtained generally remind of the tool types that we see within the Epi-paleolithic period today. Likewise, Karataş Rock Shelter was associated with the Late Upper Paleolithic period, and data regarding the *Aurignacien* culture were presented.

The biggest problem in terms of chronology supported by the examples mentioned results from the fact that some areas compared in the early period studies were studied again in later years with modern excavation techniques and that Paleolithic Age cultures were clearly revealed. Consequently, all of the studies carried out in the early period should be studied again in a detailed manner for more accurate sequencing of the places of these areas in the chronological table.

The first historical gap of the Upper Paleolithic period is seen between B.P. 55/54-41.000. Important settlements are included in this date range such as Bacho Kiro (11.level), Temnata Douпка, Stranska Skala (IIIa level), Bohunice Red Hill, Shlyakh and Kara Bom in Europe (Kuhn & Zwyns, 2014) and Bocker Tachtit (1. layer), Emireh Cave and Ksar Akil in the Near East. Another historical hiatus within the Upper Paleolithic period is seen between B.P. 27-24/22.000 years. There are important sites within this time period such as Ripiceni (IIb level), Korpatch and Korolevo (I, Ia level) in Europe (Kozłowski, 2004) and El Wad Cave (C level), Fazael, Ksar Akil, Nahal Ein Gev I in the Near East (Shea, 2013b).

8.4. Epi-paleolithic Period

When the Epi-paleolithic period is analyzed, settlements belonging to the early and late Epi-paleolithic period are intertwined as it can be understood from the table on which we created the stratigraphy model. Although Direkli Cave is the only area the absolute dating results and lithic industry analyses of which are incompatible among settlements, new dating results will enlighten us better in this regard in later times because the studies are going on in the area. The fact that old and new studies are not overlapped with, that we mentioned in the Upper Paleolithic period, also applies to the Epi-paleolithic period. For instance; the absolute dating result of Yarımburgaz Cave meets the dates used for the Epi-paleolithic period.

However, there is no satisfactory information on the lithic industry. In addition to seeing these kinds of occasions, it is possible to have a suspicion about whether settlements without dates really belong to the Epi-paleolithic period. Baradız Open Air Site, one of these areas, was defined as the Epi-paleolithic period. However, only one microlith was discovered among them when chipped stone tools were analyzed again (Kartal 2003). Such examples can be multiplied within the Epi-paleolithic period as well as the Upper Paleolithic period.

The most striking result that emerged as a result of our study is the fact that the excavation works of the Paleolithic Age are seen very rarely in numerical terms in our country, and these settlements, areas with a dating result have very low percentages. The fact that the number of the Paleolithic Age settlement area excavations to be performed in the future increase in number and are supported by absolute dates is very important in terms of the opportunity to make comparisons with our country and the surrounding regions.

Thus, we believe that the need for "synthetic sequence test" and similar studies will disappear in time. The synthetic stratigraphic model of the Paleolithic industries we created for Turkey is presented in Table 1. Reminding again that the study we have carried out is experimental and is always open to change and development serves as an invitation for the scientists who want to contribute to our study.

Paleolithic Settlement	Dating	Absolute/Relative	Paleolithic Cultures/Industries	Oxygen Isotop Stages
Gediz Deresi	B.P. 1.24-1.17 Ma	Absolute	?	34, 36
Dursunlu	B.P.990-780.000	Absolute	Flake Industries	20,21,22,25
Şehremuz Tepe	B.P.700-300.000(?)	Relative	Acheuléen	8,9,10,11,12,13,14,15,16
Kaletepe Deresi 3	B.P. > 600-500.000 (?) - 1.1 Ma	Relative	Acheuléen, Late (Upper) Acheuléen, Clactonien	-
Karain Cave Chamber E	B.P.367-440/500.000(?)	Relative	Acheuléen, Tayacien, Clactonien	13,14
Yarımburgaz Cave Lower Chamber	B.P. 390±60, 270±40	Absolute	Pebble Tools, Flake Industries	11
Karain Mağarası Chamber E	B.P.347-297.000	Relative	Proto Charentien, Charentien (Acheulio-Yabrudian)	9,10
Kaletepe Deresi 3	B.P.200/190.000	Absolute	Moustérien	6,7
Karain Cave Chamber E	B.P.160-60.000	Absolute	Karain type (Zagros type Moustérien)	5,6
Karain Cave Chamber B	B.P.200/160.000 (?)	Relative		
Tıkalı, Kanal, Merdivenli, Üçağzılı II, İkiğazlı Caves	B.P.170-45.000 (?)	Relative	Moustérien (Levanten)	-
Kurbanğa Cave	-	Relative	Moustérien (?)	-
Üçağzılı Cave	B.P.41.400/40.200	Absolute	Middle/Upper Paleolithic Transition (Levanten)	3
Karain Cave Chamber B	B.P.39.630	Absolute	Middle/Upper Paleolithic Transition	3
Kanal and Merdivenli Caves	-	Relative	Middle/Upper Paleolithic Transition /Upper Paleolithic ?	-
Üçağzılı Cave (Transition)	B.P.37.870±920-36.560±790	Absolute	Ahmarian Industry	3
Üçağzılı Cave	B.P. 34.580±620-29.060±330	Absolute	Ahmarian Industry	3
Karain Cave Chamber B	B.P.31.280-28.100/22150±130	Absolute	Aurignacien	3
Yarımburgaz Upper Chamber (Layer 8)	B.P. 24.150±240	Absolute	Middle or Upper Paleolithic ?	-
Küllünün İni, Yağlak Cave, Karataş Rock Shelter, Kapahin	-	Relative	Upper Paleolithic ?	-
Karain Cave Chamber B	B.P.20.600/19.100-17360-16.990	Absolute	Early	
Öküzini Cave I. Archaeological Unit	B.C.17.500-14.500	Absolute	Epi-paleolithic	
Üçağzılı Cave		Absolute		2
Tekeköy A, Beldibi D1 (?)	B.P.17.530±140	Relative	Industries	
Karain Cave Chamber B	B.C.16.000-14.000	Absolute		

Öküzini Cave II. & III. Archaeological Units	B.C.14.500-10.000	Absolute	Late	1
Pınarbaşı (Area B)	B.P. 13.427-12.897	Absolute	Epi-paleolithic	
Direkli Cave	B.P. 10.730±42	Absolute		
Körtik Tepe	B.P. 10.450	Absolute		-
Beldibi D1-C2, Belbaşı I	-	Relative	Industries	
Yarımburgaz Upper Chamber	B.P. 7640±90, 9190±100 10.000±890	Absolute	End of the Epi-paleolithic Period	1
Öküzini Cave IV. Archaeological Unit	B.P.10.000-7.900	Absolute	/Beginning of the Holocene	
Beldibi A2, B1, B2	-	Relative		
Baradız Open Air Site, Biris Mezarlığı, Söğüt Tarlası, Kızılın Cave, Çarkini Cave, Belpınar Karain, Şarklı (Keber) Cave	-	Relative	Epi-paleolithic	-

Table: 1

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