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A level prior to the Upper Capsian at Medjez II (Algeria): Archaeozoological and taphonomical evidence combined with archaeological data

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ABSTRACT

The paper summarizes the archaeozoological analysis of faunal remains from Medjez II, excavated by H. Camps-Fabrer. Identification and quantification of the animal remains are combined with an investigation of the aspect of the finds and the traces observed on them. The archaeozoological and taphonomical data are then compared with those concerning the lithic and bone artefacts. The lowest part of the site, consisting of layers 13 and 14, pertains to an Epipalaeolithic occupation with Iberomaurusian similarities. This chrono-stratigraphical phase I (layers 11–14) has been attributed to such an occupation, prior to the Upper Capsian.

1. Introduction

Medjez II is an open-air site, called *escargotière* in French and *rammadiya* in Arabic because of the abundance of land snail shells, ash, charcoal and burned stones. This very large Maghrebian *rammadiya* (100 m long, 40 m wide and nearly 4 m deep) is located about 4 km north of El Eulma, at 36°11.385′ N and 05°42.017′ E, on the Setif Plateau at an altitude of approximately 1000 m. The region is characterized by relatively flat landforms with hills and many wadis and water sources, such as the spring of Aïn Berda and Wadi Sarek. A second rammadiya, Medjez I, is located about 200 m to the south (Fig. 1).

Medjez II was discovered by Verguet (1995), who undertook many surveys and excavations. In 1967 and 1968, Camps-Fabrer (1968) directed several systematic excavations on a small area of the site in its deepest part. These investigations yielded a large collection of artefacts and several burials (Camps-Fabrer, 1975), and provided many radiocarbon dates obtained on charcoal samples. However, the dates have been called into question (Sheppard, 1987; Sheppard and Lubell, 1990; Rahmani, 2004a) because they do not follow a consistent stratigraphic order, which may be the result of disturbance caused by many burials.

The archaeological assemblages form a mound of unconsolidated deposits, including many burned stones, ash and land snail shells. Based on the combination of the 0.25 m deep artificial layers excavated and the variation in tool frequencies, Camps-Fabrer (1975: 418) proposed a chrono-stratigraphy of four phases. Phases II, III and IV are assigned to the Upper Capsian (Epipalaeolithic culture), whereas Phase I is defined as an Epipalaeolithic industry with Iberomaurusian similarities (Upper Palaeolithic culture), according to the bone industry. Hachi (2003) confirms this observation in his study of the lithic industry, but, other analyses (Sheppard, 1987; Rahmani, 2003, 2004b) suggest that only phases III and IV are Upper Capsian, because the oldest phases, I and II, contain mixed assemblages. Tixier (1976) also questioned the validity of these chrono-stratigraphical phases based on artificial layers.

The validity of the stratigraphy and chronological phases thus remains uncertain (Tixier, 1976; Rahmani, 2004b). Therefore, a decision was made to work according to artificial layers of 0.25 m depth to obtain a better and deeper understanding of archaeozoological and taphonomical evidence in the faunal assemblage from Medjez II. This is of special interest as the initial investigations (Merzoug, 2011, 2014) have highlighted a change in the faunal spectra and subsistence behaviours.

2. Material and method

The faunal assemblage of Medjez II corresponds to two collections, one from Verguet's (1963–1967) excavations and another from Camps-Fabrer's (1967–1968). It contains 1484 faunal remains, of which 25.5% was not studied by Bouchud (1975). For this paper, only the Camps-Fabrer collection (both studied and unstudied

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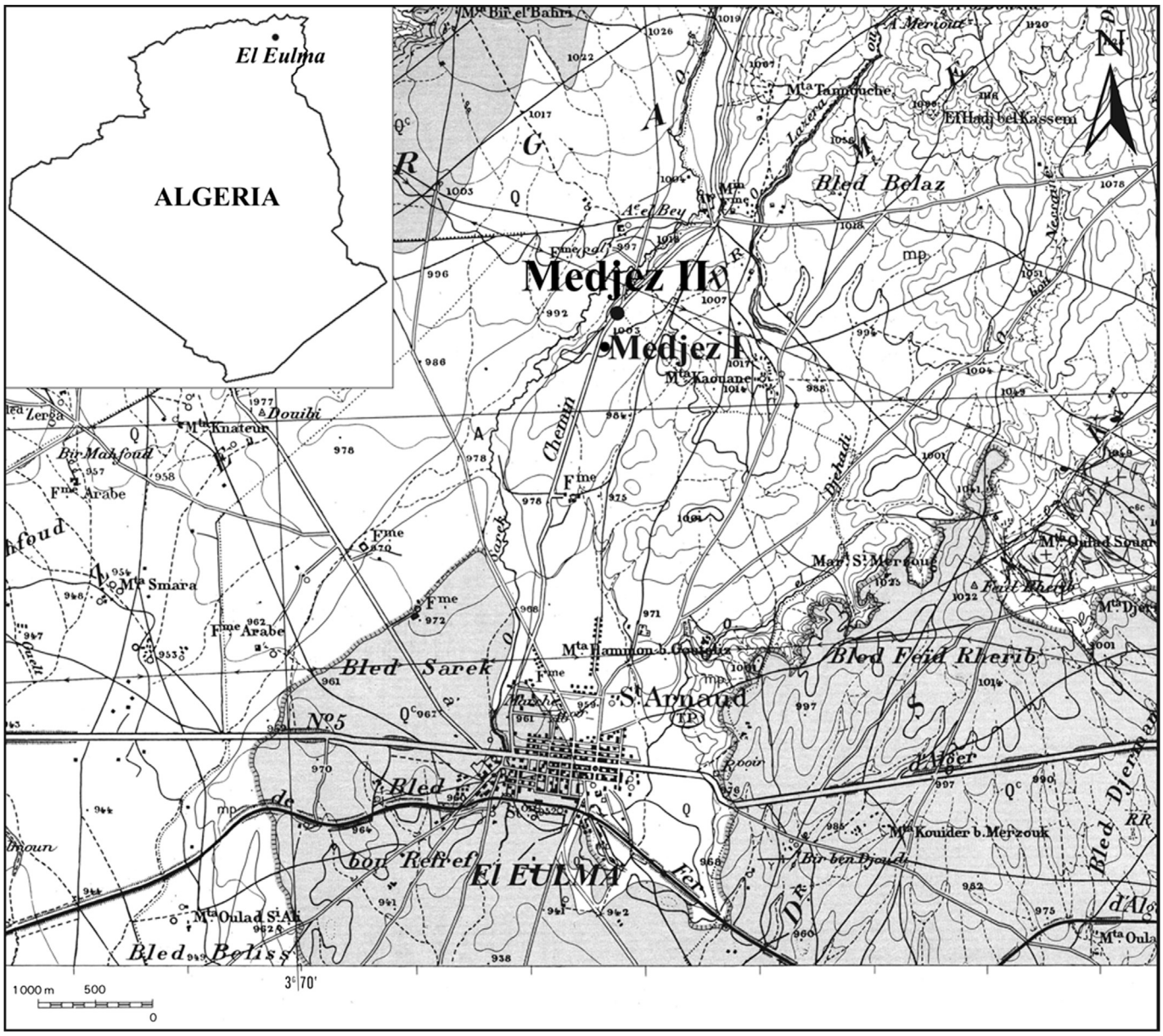

Fig. 1. Map showing the location of Medjez II (Modified from geological map 1/50 000 of El Eulma, 1977).

specimens, NR = 1308) was used, which is correlated to stratigraphic layers. The analysis consists of an archaeozoological examination and a description of macro and microscopic taphonomical modifications observed on bone surfaces.

The main result of this new analysis is recognition of the variation in the presence and the frequency of species, according to a subsistence behaviour change, as well as a modification of the function of the site (Merzoug, 2014). A serial comparison is made between archaeozoological and taphonomical results in order to characterize these observations and hypotheses. Results for fauna are compared and discussed with regard to the archaeological results on lithic and bone artefacts, molluscs and funerary evidence. All observations and comparisons are correlated to the artificial layers, designated as layers 1 to 14 from top to bottom. Layers 1 and 2 show disturbances due to ploughing (Camps-Fabrer, 1975: 80, 89) and are therefore not included in the analysis.

3. Results and discussion

3.1. Faunal and subsistence changes

Table 1 presents, for each layer, the frequencies of vertebrate species. It shows some variations in the composition of the faunal spectrum and the frequency of species: disappearance and appearance of certain species combined with increase and decrease of others. Layers 14 to 12 show a relative homogeneity within the faunal spectrum with the presence of carnivores, especially African Wildcat. A significant variation occurs from layer 12 with the disappearance of ostrich bones and an increase of the smaller species such as gazelle (*Gazella dorcas* and *Gazella cuvieri*) and small species such as hare, hedgehog, tortoise, and birds. From layer 8, the composition and the samples are too small for accurate analysis, and it is therefore difficult to interpret the faunal spectrum variations, except for layer 5, which contains a clear dominance of gazelle remains.

Table 1
Quantification of Medjez II vertebrate species per artificial layer. (NISP = Number of Identified Specimens, MNI = Minimum Number of Individuals, NUR = Number of Unidentified remains, NR = Number of faunal Remains).

Layers	Mammals																Birds				Reptiles & amphibians		NISP	NUR	NR
	Bovini		Hartebeest		Gazelle		Barbary sheep		Wild boar		Golden jackal		Wildcat		Hare		Hedgehog		Ostrich		Other birds				
	NISP	MNI	NISP	MNI	NISP	MNI	NISP	MNI	NISP	MNI	NISP	MNI	NISP	MNI	NISP	MNI	NISP	MNI	NISP	MNI	NISP	MNI			
Layer 3	1	1	2	1							3	1			3	1	1	1			2	1		12	45	57
Layer 4											1	1					2	1			3	2	1	1	7	7
Layer 5	2	1	2	1	128	3	1	1	1	1	1	1			8	1					6	1	6	3	155	40	195
Layer 6	1	1	2	1																	2	1			5	6	11
Layer 7			1	1					1	1															2		2
Layer 8			2	1	4	2	4	1	2	2							1	1			3	1			16		16
Layer 9	5	2	5	2	9	2	1	1			1	1			15	2					3	1			39	67	106
Layer 10	8	2	12	2	16	2	1	1							14	3	1	1			2	1			54	315	369
Layer 11	5	2	10	2	14	2									21	2	3	2			5	1	2	1	60	178	238
Layer 12	2	2	6	2	7	2					4	1	1	1	13	2	2	1			2	2			37	43	80
Layer 13	21	2	48	4	16	3	4	1			3	1	1	1	6	2	2	1	8	1	1	1	1	1	111	69	180
Layer 14	11	3	12	2	7	1	1	1			1	1	1	1	1	1	1	1			2	1			37	10	47

Fig. 2 shows a change in the main game per layer. It demonstrates a relative dominance of large and medium size game in layers 13 and 14. Bouchud (1975: 390–391) also found that large bovids (aurochs and giant buffalo) and hartebeest were concentrated in the lowest levels. An increase of small and especially very small size game occurs in layers 12 to 9. After that, it is difficult to recognize any change in subsistence behaviours, due to both the low quantity of bones and the rare archaeozoological results, except in layer 5, as shown in Table 1.

According to Camps-Fabrer (1975), the mollusc remains show an increase in the frequency of land snails from the lower to the upper layers. However, this is not well documented per layer and, as noted by Lubell et al. (1982–83), the beginning of this change cannot be determined.

Three major levels can be isolated: layers 14-13, layers 12 to 9, and the upper layers. An important disparity of subsistence behaviours can be demonstrated between the first two layers with the increase of small and very small size game, the disappearance of ostrich and the diversification of avifauna. This difference could be connected to the cold and arid 8 ka event, also called the Abrupt Early to Mid-Holocene Climatic Transition (Alley et al., 1997, 2005). Comparable and coeval subsistence change has been identified at two other Algerian sites, Kef Zoura D and Aïn Misteheyia (Jackes and Lubell, 2008) and also in other regions of the Mediterranean Basin such as the Near East (Davis et al., 1988; Davis, 2005; Munro, 2009) and the Iberian Peninsula (Lubell, 2004).

The third level corresponds to an archaeological deposit relatively poor in faunal remains and archaeozoological observations. However, results from layer 5 suggest that the function of the site during the deposition of this layer was more related to funerary practice (faunal remains as grave goods) than to subsistence activities (Merzoug, 2014).

3.2. Taphonomical indicators

Table 2 summarizes all results from the taphonomical analysis combined with data for the representation of animal bone frequency and human remains distribution. With regard to burial variations and post-depositional process, six taphonomical levels can be identified.

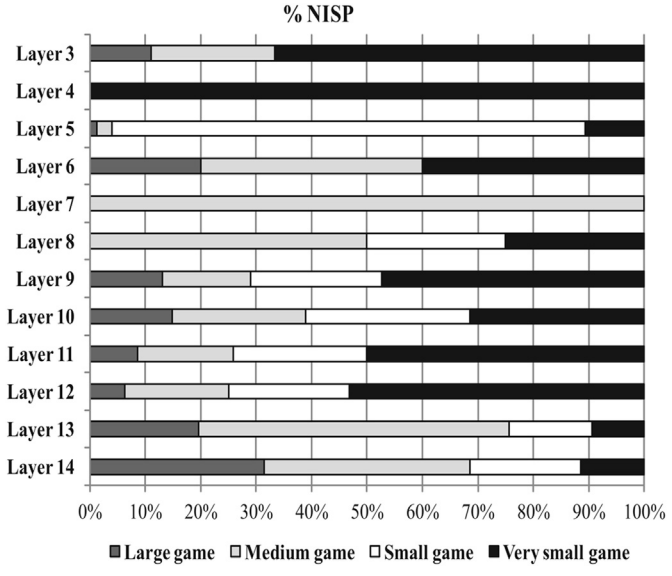

Fig. 2. Frequencies of game at Medjez II: Large game = 300–1000 kg; Medium game = 100–300 kg; Small game = 100–20 kg; Very small game ≤ 20 kg.

Table 2
Stratigraphic distribution of human remains and taphonomic observations on animal bones showing frequencies of bone surface modifications using weathering and abrasion stages following Behrensmeyer (1978, 1982); Color: B = brown, BL = whitish; Oxide: Fe = iron, Mn = manganese; Root etching: Stage a = affects a part of bone surface, Stage b = affects entire surface.

Layers	NR	Taphonomy (% NR)													Human remains	
		Abrasion	Fragmentation	Color B	Color BL	Concretion	Fe oxide	Mn oxide	Weathering stage 0–1	Weathering stage 2–3	Weathering stage 4–5	Root etching A	Root etching B	Carnivore marks	Skeleton	Isolated remains
Layer 3	57		21.1	1.8		1.7							3.5		H3	5
Layer 4	7		28.6									42.9			E3	1
Layer 5	195	0.5	55.4	53.3			0.5		1.1			55.4	0.5	1.1	E4 H2 H1 E1-2 E5 E6	
Layer 6	11	18.2	45.5			9.1			9.1							
Layer 7	2								50			50			H4	
Layer 8	16		25						6.2			12.5			H4	6
Layer 9	106	1	18.6			1.9			1	1.9		21.5	2.9	6.8		1
Layer 10	369	0.5	7.8						0.3	0.5		12.9	0.3			1
Layer 11	238	0.4	6				0.8		0.4	1.7	2.5	16.1	2.5	1.7	E7	1?
Layer 12	80	2.5	22.5				1.2			2.5	2.5	38.7	1.2	1.2		2
Layer 13	180	2.2	34	0.6		0.6	1.1	1.1	2.2	4.4		45.5	5	0.6		
Layer 14	47	4.2	27.7		8.5	2.1	2.1	2.1	2.1	6.4		68.1	2.2			

Level 1 (layers 14 and 13): The examination of bone surfaces reveals that root etchings are the most frequent marks, followed by signs induced by climatic and edaphic factors, such as weathering and sediment composition (Behrensmeyer, 1978). The presence of some bones covered by concretions indicates significant water activity, which could be correlated with coloration of bone surfaces by manganese and iron oxides (Brugal, 1994). A high frequency of bone fragmentation is observed. These taphonomical observations indicate that the faunal remains were exposed on the sub-surface for a significant time and affected by some post-depositional modifications. This level contains no human remains.

Level 2 (layers 12 and 11): This level corresponds to an increase of evidence for weathering with the presence of stage 4–5 of this process, which is related to more significant climatic and edaphic variation than during the previous phase. Carnivore marks are also well represented and other taphonomical modifications decrease, especially root etching and fragmentation. Manganese oxide coloration and concretion is absent. Level 2 reveals a difference in burial process compared with level 1, as it contains the first observed human remains, skeleton E7.

Level 3 (layers 10 and 9): In this level, some bone modifications are totally absent, such as coloration by oxides and stage 4–5 weathering. Carnivore marks increase mainly in layer 9, as well as abrasion and concretion. Only two human bones were collected.

Level 4 (layers 8 to 6): Due to problems of bone representativeness, layers 8 to 6 are included as one phase. These layers present no significant taphonomical observations. One skeleton (H4) is recorded in this level.

Level 5 (layer 5): Bones from layer 5 are well preserved and are little affected by natural factors. Root etchings are the most often observed marks, followed by fragmentation and a brown coloration of bone surfaces, which indicates a difference in the sediment composition compared with other layers. Most of these faunal remains are associated with burials, especially H1 and E4 to E6, which suggests they were grave goods.

Level 6 (layers 4 and 3): These layers show a decrease of bone remains with insignificant taphonomical observations. Layers 4 and 3 contain many human remains, especially the H3 skeleton.

3.3. Lithic and bone artefacts

Based on variation in the tool frequencies, Camps-Fabrer (1975) proposed four chronological phases from the bottom to the top of the deposits (Table 4).

She defined the oldest, Phase I, an Epipalaeolithic industry with Iberomaurusian similarities, as suggested by bone tools. She also argued that there are no specific artefacts that would allow assigning this phase to either Typical or Upper Capsian. Her interpretation is supported by Hachi (2003), but Rahmani (2003, 2004b) stated that this phase is characterized by "mixed culture material" which contains artefacts of both Upper and Typical Capsian characteristics. Phases II, III and IV are assigned to the Upper Capsian (Camps-Fabrer, 1975; Hachi, 2003). According to subsequent analyses (Lubell et al., 1984; Sheppard, 1987; Rahmani, 2003, 2004b), only phases III and IV are Upper Capsian and the others contain mixed assemblages.

The composition and frequency of lithic and bone assemblages by layer (Table 3) indicate that the characteristic Upper Capsian patterns appear in layer 12, especially with regard to bone tools and ornaments. Layers 13 and 14 contain none of the usual and frequent Upper Capsian bone tool types (Camps-Fabrer, 1966, 1975) such as awls with an articular end (type 19), double awls (type 29), blunt bone bladelets (type 17) and daggers (type 48). The absence of specific ornaments such as bone tubes (type 50) confirms that the two deepest layers cannot be assigned to the Upper Capsian, even if

Table 3
Distribution of some characteristic archaeological material from Medjez II based on data from Camps-Fabrer (1975). For bone artefacts: 17 = blunt bone bladelets, 19 = awls with preserved articular ends, 29 = double awls, 48 = daggers, 50 = bone tubes, 52 = tubular bead.

Layers	Bone industry				Ornements		Lithic industry			
	17	19	29	48	50	52	Fluted nucleus	Crescents	Trapezes	Triangles
Layer 3						2	10	2	40	20
Layer 4						1	2		16	8
Layer 5	2					4	1		5	5
Layer 6		1				2	3	3	1	3
Layer 7		1		1	1	3		1	1	1
Layer 8			1			2		1		1
Layer 9	1				1	1	1	2	2	3
Layer 10					1	1	2	3		
Layer 11								1	1	3
Layer 12	1		2				3		3	1
Layer 13						1		3		
Layer 14							1			

Table 4
Reassessment of Medjez II chronological phases based on taphonomical and archaeozoological results combined with other archaeological data. * = calibrated using Calib 6.0.1, 2 sigma range.

Layers	Depth of deposit	Human remains		Radiocarbon dates (Cal BP)*	Camps-Fabrer's phases (1975)		Faunal remains and taphonomical indicators	Suggested phases	
		Skeleton	Isolated						
Layer 1	0–0.25 m				IV	Upper Capsian	Layers disturbed by ploughing		
Layer 2	0.25–0.50 m								
Layer 3	0.50–0.75 m	H3	5	7155–7667 6828–8028			Layers disturbed by burials and/or faunal remains in connection	C	Upper Capsian
Layer 4	0.75–1 m	E3	1	7563–9673	III	Upper Capsian	with burials?		
Layer 5	1–1.25 m	E4 H2 H1 E1-2 E5 E6		8143–8151			Most of faunal remains in connection with burials (grave goods?)		
Layer 6	1.25–1.50 m			8011–8724	II	Upper Capsian	Layers disturbed by burials and/or		
Layer 7	1.50–1.75 m	H4		8972–9497			faunal remains in connection		
Layer 8	1.75–2 m		6	7848–8377			with burials?		
Layer 9	2–2.25 m		1	8153–8728			Increase of small and very small size game Disappearance of ostrich bones	B	Upper Capsian
Layer 10	2.25–2.50 m		1	7926–8361					
Layer 11	2.50–2.75 m	E7	2		I	Epipalaeolithic	Increase of terrestrial molluscs		
Layer 12	2.75–3 m		1?	8416–9009		Culture with			
Layer 13	3–3.25 m			9134–9938		Iberomaurusian	Dominance of large and medium	A	Epipalaeolithic Culture
Layer 14	3.25–3.50 m			9539–10207		similarities	size game Consumption of ostrich meat Relative abundance of terrestrial molluscs		with Iberomaurusian similarities

a tubular bead (type 52) was found in layer 13, because its presence could be due to contamination from upper layers. The presence of abundant lithics, the low percentage of microliths (represented only by crescents) and the absence of specific geometric microliths, such as trapezes and triangles, supports this hypothesis. One fluted nucleus is related to pressure-flaking and suggests an Upper Capsian level, but as with the tubular bone bead, this unique piece could come from the upper layers. It might also be erroneously identified.

The other layers (12–3) present classic and typical Upper Capsian artefacts: fluted nuclei, trapezes, triangles and perforators (Aïn Khanga type). However, a re-examination of both the lithic and bone assemblages should be conducted to confirm this hypothesis.

4. Conclusion

Taking into account the faunal and subsistence changes, three major phases can be suggested, as summarized in Table 4, which are reasonably well correlated with changes in the lithic and bone assemblages. During Phase A, the Medjez II habitants hunted mainly large and medium-size game and ate ostrich meat. Furthermore, no significant Upper Capsian tools or ornaments have been found. Therefore, there is a level prior to the Upper Capsian, as Camps-Fabrer (1975) suggested. According to this proposition, this level corresponds only to the oldest layers 14 and 13 of Phase I (Table 4). These layers contain no human bones and were not disturbed by burials, as noted by Rahmani (2003, 2004a). Moreover, the radiocarbon dates from these lower levels conform to the stratigraphy, but several dates in upper levels indicate reworking, no doubt caused by disturbance due to human burials.

In conclusion, despite the absence of a recent study of the lithic and bone industries by layer, this research has demonstrated the presence of a level prior to the Upper Capsian at Medjez II, by studying subsistence change and taphonomical characteristics of the faunal assemblage. This level also precedes the period of climatic change that occurred around 8200 cal BP, and could mark the end of a cultural facies (Iberomaurusian, Typical Capsian) and the Palaeolithic/Epipalaeolithic transition. Further studies, especially using a technological approach, as well as new excavations, should provide the information needed to characterize more precisely these levels, as discriminated by the archaeozoological study.

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