

# ENVIRONMENTAL PERCEPTION IN ALGERIAN HOLOCENE ART: CARNIVORES IN THE SAHARAN AND TELLIAN ATLAS

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## ABSTRACT

The Holocene representations are among last testimonies of the presence of wild and domestic mammals of the Atlas massifs (Tellian and Saharan) and of the central Sahara. On the rock walls of the same places or on the ancient mosaics of the first Afro-Roman cities, carnivores can be found nearby or associated with herds of wild or domestic animals, cheep, cattle, dogs and figures. On these territories, we owe to the recurrent Holocene movements, the intense presence of herds of wild and domestic animals, associated with the numerous communities of hunters/ agro-pastoralists, and later to the conquerors who built modern cities.

KEYWORDS: Tell Atlas, Saharan Atlas, Central Sahara, rock art, carnivores, mosaics, Neolithic.

PERCEPTION ENVIRONNEMENTALE À TRAVERS LES REPRÉSENTATIONS  
HOLOCÈNES EN ALGÉRIE : CAS DES CARNIVORES DANS LES DOMAINES  
ATLASIQUES (SAHARIEN ET TELLIAN)

## RÉSUMÉ

Les représentations holocènes sont parmi les derniers témoignages de la présence des mammifères sauvages et domestiques des massifs atlasiques (tellien et Saharien) et du Sahara central. Sur les parois rocheuses des mêmes lieux ou sur les mosaïques antiques des premières cités afro-romaines se trouvent représentés des carnivores non loin ou associés à des troupeaux d'animaux sauvages ou domestiques d'ovins, de bovins, de chiens et des personnages. Sur ces territoires, on doit aux circulations holocènes récurrentes, la présence intense de troupeaux d'animaux sauvages et domestiques, associées aux nombreuses communautés de chasseurs/agropasteurs, et plus tard aux conquérants bâtisseurs de cités modernes.

MOTS-CLÉS : Atlas tellien, Atlas saharien, Sahara central, représentations rupestres, carnivores, mosaïques, Néolithique.



## INTRODUCTION

Algeria is an important zone for better understanding Quaternary paleoenvironmental issues, particularly during the Holocene. Due to its geographical location, studying this area can help us establish the influences between the north (Mediterranean shores) and the south (African territories). Excavations of coastal sites in the Mediterranean, Atlas and Sahara have provided most of the bio-archaeological remains. Archaeological surveys in Algeria have led to the discovery of numerous rock art scenes, documenting the diverse range of animal species in the Holocene. Classical archeology has also revealed numerous mosaics demonstrating the survival of a variety of fauna, including carnivores. Carnivores will serve as indicators here to help us understand the prevailing climate during the Holocene.

In the Holocene, this region was at the crossroads of multidirectional migrations of human groups and many different animal species. Due to the Holocene climate fluctuations, with its humid and arid phases, the Sahara became a permanent desert, separating the northern territories from the rest of the African continent. This desert, formed by a long ribbon of dunes, seems to have acted as a barrier, limiting the movement of humans and animals, and isolating the Maghreb from the rest of the continent.

In addition to climate change, there was an upheaval in the behavior of human groups and fauna at this time. During the early and middle Holocene, humans adapted and established production economies, as they evolved from the status of hunter-gatherers to that of hunters/agropastoralists and settled over vast areas to build the first ancient cities.

With the Holocene, new behaviors evolved, such as domestication, agricultural techniques, induction and the development of metallurgy, taking human groups to a new level. The use of metal in the manufacture of weapons had adverse consequences on the animal environment, particularly for felids. During this period, these North African territories also entered into Mediterranean history, becoming an important supplier for the emerging empires (Carthage and Rome) in various commodities, such as felids.

This article will discuss the place of carnivores in the Holocene as demonstrated by the bone remains and iconographies observed at prehistoric (Iberomaurusian, Capsian, Neolithic, Metal Ages) and classical sites in Algeria. We have limited our work here to the selected areas in the Atlas Mountains and eastern Algeria.

In this study, we have drawn up a list of the Holocene sites in Algeria where bio-archaeological remains and iconographies have been documented relating to carnivores (tab. 1), and we have indicated the different fossil species and those appearing in the iconography.

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# 1. METHODOLOGY

An overview of the presence of carnivores during the Quaternary is complex with regard to Algeria due to a lack of recent work in this area providing new data. To understand the paleoenvironment in the region, we must rely on felids as an index of the diversity of the ecosystem and the climate upheavals reported throughout the Holocene. The iconography (rock art and mosaics) is another parameter that tells us about diverse cultural behaviors and population growth.

- *Chronology and region:* Our approach is limited to the Holocene chrono-climatic sequence in the southern foothills of the Atlas Mountains, the hilly plains and lagoons of the eastern highlands, and the Mediterranean coastal plains. These regions offered favorable conditions for the different animal species that evolved and adapted to climate change. Human groups also adapted to these changes by establishing a new form of subsistence economy.
- *Carnivores and iconography:* the bone remains discovered during excavations are rare. Table 1 shows the presence of the different taxa. Not all species are represented. Rock art (Neolithic and Metal Ages) and subsequent mosaics (Roman antiquity) allow us to better document the carnivore species depicted. It seems that a voluntary choice was made from the Neolithic until the first centuries AD in the choice of animals depicted. The overview proposed here focuses on carnivores<sup>1</sup>, which were a source of danger and rivalry to humans, as well as a source of wealth.
- *Primary economy:* A form of exchange slowly developed from the start of the Neolithization process. The initial way of life, based on predation, was replaced by the production of objects with an added value. Despite their ferocity, during the classical period, these felids became a source of wealth and leisure for people. The geography and topography of the region was favorable to the presence of diverse mammals, which in turn attracted carnivores. From the Neolithic, it also helped facilitate the population's pastoral activities.
- *Symbolic and lucrative activities:* Felids are magnified in the rock art. They are rarely depicted attacking, but are often depicted in a predatory context. Humans domesticated some species (cattle, sheep, goats and canids) and magnified others (bovids and carnivores). These species are visible today in the rock art and mosaics.

This study identifies the species that humans incorporated into their imagery in the rock art and mosaics. In the first centuries of our era, this fauna was present in the economic, sports and cultural spheres. Our approach is developed around feline species as a symbol of predation and power; their teeth and skin represented

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<sup>1</sup> Not all carnivores are depicted in the rock art or in the mosaics. The most iconic animals are felids and canids, which are systematically present.



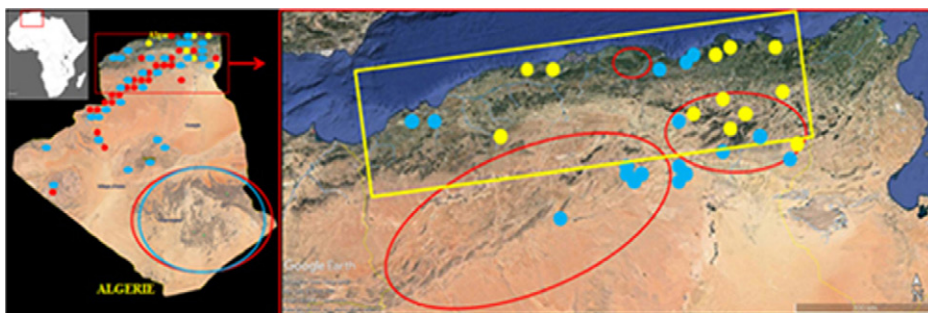


Figure 1. The main study regions (Red and blue circles and red dots: rock art; blue dots: Epipalaeolithic and Neolithic sites; yellow dots: some ancient sites with mosaics).

strength, prestige and wealth. These elements laid the foundations for the future activities that developed, with the appearance of the first mixed Afro-Roman cities.

In order to understand the geographical and geo-ecological conditions during the Holocene, we shall begin by describing the context of the Atlas Mountains, the hilly areas of eastern Algeria, and the urbanized Mediterranean coast during the classical period. We will then examine the main activities that took place in order to better understand the human behavior involved, as already discussed by many authors (Flamand, 1921, Frobenius, 1925, Solignac, 1925, Lefebvre 1967, Cominardi 1979, Roubet, 1979, Iliou 1982, Amara, 2014). For this, we have chosen a few major sites that allow us to better demonstrate the relationship with carnivores and other mammals and the use that was made of felids and canids in hunting.

## 2. A VAST AND EXTENSIVE TERRAIN COMPOSED OF CLOSED VALLEYS

The study terrain is organized into three zones, situated adjacently to each other from south to north and from west to east (fig. 1).

All these mountains (avg. alt. 2000 m) are the result of significant tectonic activity. They were carved out and eroded, sometimes deeply, by the wadis which transported large quantities of alluvium, shaping the many valleys. Among the most important, from west to east, are Wadi Dermel, Namous, Gharbi, Seggueur, Mzi-Djedi, and Labiodh, among others. They cross wide valleys and carve passages through the Atlas Mountains before disappearing into the sands. These hilly landscapes, irrigated by numerous endorheic wadis, attracted and offered refuge<sup>2</sup> and food sources to the many herds of mammals and human groups during the Holocene.

<sup>2</sup> The basins on the southern facades of the Atlas Mountains provided many habitats in the Holocene (Tables 1-2). The eastern basins (900 to 0 m altitude) were irrigated by wadis which took

The lowlands, located on the edge of the Saharan Platform and the Atlas foothills, are irrigated by an intense hydrological network. These wadis have their source in the peaks of the Atlas Mountains and shape the many alluvial plains on the southern foothills and northern slopes. In the north, beyond the Tell Atlas, the highlands are succeeded by a series of coastal plains (Amara, 2020; Damouche & al., 2020; Younsi & al., 2020).

The southern Atlas foothills, from the Ksour mountains and Djebel Amour (northern Atlas), to the Nemencha mountains, present a succession of almost closed valleys. They are encircled by successive extensions of the mountains from the west to the Ouled Naïl (Central Atlas) and Chott el Hodna. A large depression marks a break, then they resume in another more rugged form toward the Aures and Nemencha (Eastern Atlas).

The northern slopes of the Atlas dominate the highlands, offering small openings or passages allowing movement between the different plains, which follow on from each other from the foothills of the Moroccan Atlas in the west, to the Tunisian border in the east along travel routes connecting the foothills and the Saharan lowlands. The mountain ranges, which are oriented southwest/northeast and are organized around several summits, act like a barrier separating the Sahara to the south, and the territories of the Maghreb to the north (Despois and Raynal, 1975; Mehrouf, 1965). The arrangement of the Saharan Atlas Mountains constituted a refuge for mammals and humans during their seasonal migrations. The eastern regions were subject to intense urbanization from the end of the Neolithic period<sup>3</sup>. The Numidian villages attracted various Mediterranean groups who came to build the many mixed Numidian-Carthaginian and Numidian-Roman cities.

For methodological reasons, we have limited our study area to eastern Algeria, the coastal plains, and the eastern mountains of the Saharan Atlas.

### 3. CLIMATE AND FAUNA

The end of the Pleistocene glacial cycle heralded the Holocene warm period. During the early Holocene, our study area was a warm, humid region with a major hydrographic network. We can cite major rivers such as the Namous, El Gharbi, Seggueur, El Abiodh Mzi-Jedi among others, which flowed into the chotts and ergs. The highlands were dotted with sabkhas, which were fed by numerous rivers (Chott

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the gentle north-south and north-east slopes. They would have irrigated a large flat area dotted with jebel, cliffs and peaks. Herds of animals and people occupied these areas, which offered them security and warmth. The archaeological sites are the irrefutable evidence of the intense human occupation of all of eastern Algeria as far as the eastern Mediterranean shores (Golf of Gabes). The many animal species documented at the diverse prehistoric sites and in the rock art and mosaics show the importance of carnivores to these populations.

<sup>3</sup> Intense megalithic activity encompassing all the territories in the eastern Maghreb (Tunisia, eastern Algeria).



el-Gherbi and el-Chegui, Zahrez el-Gherbi and el-Chergui, Chott el-Hodna and the many sabkhas in the Constantine region), while in the north, a dense network of wadis flowed towards the Mediterranean Sea including the Chelif, Soummam, Seybouse and Meleg.

Abundant vegetation provided food for many species of mammals. Alongside this herbivorous fauna was diverse carnivorous fauna (tab. 1). Neolithic groups depicted some of these species in the rock art, and during antiquity they were depicted in color in the mosaics of wealthy homes (1<sup>st</sup> to 5<sup>th</sup> century) (tab. 2).

With climate changes came changes in the wildlife. Some of the taxa that were dominant in the Pleistocene disappeared or adapted, while other species<sup>4</sup> which were accustomed to the Holocene climate conditions arrived. It seems that from the very start of domestication (sheep, goats and cattle), dogs were involved in hunting activities alongside man. In this varied environment, carnivores were also present.

In the middle of the Holocene (around the 3<sup>rd</sup> millennium BC), the desertification process began, changing the flora and fauna. Large herbivores gradually disappeared, and *Syncerus antiquus* became permanently extinct. Only the valleys, high plains and Atlas Mountains (the Saharan and Tell Atlas) still offered the refuge of a temperate climate.

As the climate deteriorated, it became difficult for the wildlife to adapt. Horses, which were introduced by humans around 1,200 BC, disappeared from the Saharan regions around 100 BC, but continued to survive beyond the Saharan Atlas to the north, and were replaced by dromedaries further south. The desertification process dried up the Saharan rivers and lakes, and the first expanses of dunes appeared and became permanent with the first arid periods. This desert formed a real barrier, isolating the Atlas from the rest of the African continent and preventing the movement of the existing fauna or the arrival of new fauna.

The Atlas Mountains became attractive to both wildlife and people, and many rock shelters and caves were taken over by the first Neolithic hunters/agropastoralists who settled there with their domestic animals. Some of the walls of their rock shelters and caves still bear engravings of the fauna that lived alongside them.

Later the first cities and urban agglomerations<sup>5</sup> appeared in the eastern Maghreb, attracting the first Mediterranean populations interested in North Africa. This accelerated events as proto-cities became incorporated into the Mediterranean world and North Africa entered into Mediterranean history. The emergence of the first cities took place on or near Numidian and Punic towns. This was the case of *Caesarea* and many other cities<sup>6</sup> whose mosaic decorations depict carnivores.

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<sup>4</sup> The domestication of sheep has been confirmed in eastern Morocco (Bougriane, 2013; Nekkal, 2015).

<sup>5</sup> The appearance of the first cities suggests an upheaval in human behavior. Needs were becoming diversified, new ways of life were developing, and conflicts due to rivalry between human groups influenced relations between cities (subject pending).

<sup>6</sup> Constantine, formerly Cirta; Jijel, formerly *Igilgili*, Djemila, formerly *Cuicul*, Sétif, formerly *Sitifis*, and Hippone, formerly *Hippo-Regius*, among others.



TABLE 1. DISTRIBUTION OF CARNIVORES SINCE THE UPPER PLEISTOCENE AT THE HOLOCENE (AFTER HADJOUIS, 2013, MODIFIED AMARA AND SERADJ, 2020)

Famille		PLÉISTOCÈNE sup.	HOLOCÈNE			ICONOGRAPHIE		
			Anc.	Moy.	Hist.	ACTUEL	Rupestre	Mosaïque
Felidae	<i>Panthera leo</i> , Lion, Aher	+	+	+	+		+	+
	<i>Panthera pardus</i> , Panthère, Tirayine	+	+	+	+		+	+
	<i>Acinonyx jubata</i> , Guépard, Amayas	+	+	+	+	+	+	+
	<i>Felis libyca</i> , Chat ganté	+	+	+	+	+		
	<i>Felis Margarita</i> , Chat des sables	+	+	+	+	+	+	
	<i>Felis caracal</i> , Lynx caracal	+	+	+	+	+		
	<i>Felis serval</i> , Serval	+	+	+	+		+	
Hayenidae	<i>Crocota crocuta</i> , Hyène tachetée	+	+	+	+	+	+	
	<i>Hyaena hyaena</i> , Hyène rayée	+	+	+	+	+	+	+
Canidae	<i>Canis aureus</i> , Chacal doré	+	+	+	+	+	+	+
	<i>Canis familiaris</i> , chien	+	+	+	+	+	+	+
	<i>Lycaon pictus</i> , Lycaon ou Cynhyène	+	+	+	+	+	+	
	<i>Fennecus zerda</i> , Fennec, Axurhi	+	+	+	+	+		
	<i>Vulpes vulpes atlantica</i> , Renard de l'Atlas, Ak3ab	+	+	+	+	+	+	
Ursidae	<i>Ursus lartetianus</i> , Ours de Lartet	+	+	+	+			+
Mustelidae	<i>Mellivora capensis</i> , Ratel du Cap	+	+	+	+	+		
	<i>Poecilictis libyca</i> , Zorille du Sahara, Tiska	+	+	+	+	+		
	<i>Mustella nivalis</i> , Belette	+	+	+	+	+		
	<i>Mustella erminia</i> , Hermine	+	+	+	+			
Lutridae	<i>Lutra lutra</i> , Loutre	+	+	+	+			
Herpestidae	<i>Herpestes ichneumon</i> , Mangouste ichneumon	+	+	+	+	+		
Viverridae	<i>Genetta genetta</i> , Genette commune, Chebirdou	+	+	+	+	+	+	

#### 4. CARNIVORES DURING THE HOLOCENE IN THE ROCK ART AND MOSAICS

In this study, we have provided an overview of the carnivores visible in the rock art and mosaics. Among the diverse list of fauna, we have noted the presence of all the North African bestiary including carnivores. We have drawn up lists for



the Holocene sites in Algeria (tab. 2) that have provided bone remains or iconographies (rock art and mosaics) relating to carnivores. We have also cited the exhaustive list of the order Carnivora recorded in Algeria during the Holocene, of which felids and canids are the dominant group.

#### 4.1. CARNIVOROUS MAMMALS

The Carnivora order includes 8 families (Hadjouis, 2013). Six species have existed since the end of the Pliocene (Tertiary). This is the case of felids such as the cheetah (*Acinonyx jubata*, Amayas) and the African wildcat (*Felis lybica*), and Viverridae, such as the common genet (*Genetta genetta*). Humans chose to depict some of these taxa in the diverse rock art scenes and mosaics. Felids are the most represented species among the carnivores, followed by canids. They can be identified at all the Atlas sites (more than 400 sites). During our work in the field, we observed a balanced distribution of carnivores and noticed that there are more canids at the sites in eastern Algeria and more felids in the northern Atlas.

Of the 8 families, almost only felids and canids have been depicted, and rarely other carnivores. However, a genet has been portrayed in the Constantine region (Khanguet el-Hadjar).

- *Felids*: Lions are often depicted alone. The only sites where they are depicted in a pack are in Kef Messiouer (7 figures, Sedrata, eastern Atlas) where lions are portrayed in a scene in which a female lion is hunting a boar to feed her cubs. The scene in Oued Romeila (7 figures) in Laghouat (central Atlas), shows static felines that do not seem to be hunting.
- In Tiout (4 figures, Ain Sefra, northern Atlas), the scene shows a lioness and her cub surrounded by hunters who appear to be attacking the felines. Many other scenes of hunting antelope and attacks also exist such as in Djattou, Wadi Dermel, Merdoufa, Hadjret Mokhotma, Teniet el Kherrouba, and Zaccar. However, only one site has been documented where a lion is attacking a man (Bou Saada). The situation is different in the central Sahara where scenes of felines are numerous. This is the case with panthers which are often depicted in groups. The sites in the Ksour mountains present many figures of panthers such as at Wadi Dermel, Guelmouz el-Abiodh, Wadi Mellah, Hadjret Errebeg, Hadjret Mokhotma (Ouled Naïl) and Kef Fentaria (Constantine region).
- *Canids*: Dogs are the dominant species. They appear in two major scenes. In the east, at the site of Khanguet el-Hadjar, a dog watches over the flock of sheep with the shepherd. The scene is like a sort of “medallion” (Roubet and Amara, 2011). Reading all the medallions seems to tell us about the process of domesticating sheep in the Constantine region. These scenes, which are mainly of sheep, give us clues as to the emergence of the first Neolithic societies (Amara and Roubet, 2014). The second scene is at Tiout, where hunters are depicted accompanied by dogs attacking a large feline and her





TABLE 2. CLIMATO-CHRONO-CULTURAL INDICES OF ALGERIA: SOME DATING OF NEOLITHIC SITES, METAL AGES AND ANTIQUITY. ROCK ART AND MOSAIC. DISTRIBUTION OF WILD AND DOMESTIC FAUNA (ROUBET AND AMARA, 2016, SOLEIHAVOUP, 2003, LHOÏTE, 1970. MODIFIED BY AMARA AND SERRADJ, 2020)

PHASES CLIMATIQUES	ART RUPESTRE	CULTURES	SITES	DATATIONS 14C	CARNIVORE	FAUNE DOMESTIQUE	FAUNE SAUVAGE		
Holocène	0	Algérie orientale et méditerranéenne							
		Antiquité	Nombreux sites mosaïques	2 au 5e siècle	+	+	+		
		Age des métaux	Art rupestre libyco-berbère	-1000 à 500	+	+	+		
	-1000	Inter pluvial	Piémonts atlasiques sud						
			C.S.	<i>El-Mermouia</i>	4290 ± 270 B.P. à 6460 ± 130 B.P. ; MC 285				
				<i>Rabah</i>	4590 ± 300 B.P. à 5350 ± 300 B.P. ; ALG 17				
			Néol.	<i>Brézina</i> (nbrs grottes)	5850±150 B.P. 4730±100 B.P. 4160±100 B.P.	+	+	+	
	<i>Safiet Bou Rhenan</i>	7220±100 B.P. à 5270 ±100 B.P. ; MC 280			+	+	+		
	-2000	Pluvial	Néol.	<i>Ain Naga</i>	9170±200 B.P. ; Gif 1220	+	+	+	
			Epipal.	Plusieurs niveaux	à 7500±200 B.P. ; Gif 1221	+	+	+	
	-5000	Pluvial	Hauts plateaux						
			Néol.	<i>Damous El-Almar</i>	5 720± 195 BP ; Alg 10 5 400± 190 BP ; Alg 11	+	+	+	
					6 530 250 BP ; Alg 37 4 340 200 BP ; Alg 30	+	+	+	
			Capsien sup.	Niv. 12 à Niv. 3	7 860 ± 130 BP ; Mc 325 à 6 500±150 BP ; Mc 151	+		+	
					<i>Kef</i>	9 390± 130 BP ; SMU 712 à 5 969± 115 BP ; I-9835	+		+
<i>Zoura D</i>					9 590±155 BP ; I-7691 9 280±135 BP ; I-7691 7 280±130 BP ; SMU 712	+		+	
Capsien typ.			<i>Ain Mistehiya</i>	8 800±150 BP ; Mc 327 8 500 ±150 BP ; Mc 322	+		+		
-8000			Pluvial	Epipal. IBM	<i>Medjez II</i> Niv. 14 Niv. 13	8 800±150 BP ; Mc 327 8 500 ±150 BP ; Mc 322	+		+
					Algérie méditerranéenne				
-1100			Inter pluvial	Néol.	<i>Gueldaman I</i>	5 995 40 BP ; Gif 12878	+	+	+
	<i>Kristel</i>	6680±300 B.P. ; Gif. 463							
	Epipal. IBM	<i>Cimetière des Escargots</i> (plein air)		7760±190 B.P. ; Alg.40			+		
		<i>Oued Guettara</i>		10190±230 B.P. 6680±300 B.P.			+		
Pléistocène	Inter pluvial	Epipal. IBM	<i>Tamar Hat</i> Niv. Sup	10 350 ± 370 BP ; IEN 67/31			+		
			Niv. 4	11 450 ±480 BP ; IEN 67/31 Alg	+		+		



cub. Jackals are occasionally depicted, as are foxes. Hyenas are only depicted once, in the Ksour Mountains. In the mosaics, the different subspecies of dogs can be observed (see below).

- *Rodents*: These are the least represented species, and only one figure has been documented in the Atlas mountains, in Khanguet el-Hadjar. Here, a genet has been engraved, and can be seen leaping near a shepherd surrounded by his sheep and dogs (Roubet, 2003).

The same themes that have been observed during recent prehistory were reproduced a few thousand years later in many mosaics (see below).

## 4.2. CARNIVORES IN THE ICONOGRAPHY

In Algeria, 58 carnivore species have been documented for the Holocene, of which currently only 34 species remain. From this list, we have only retained the carnivores that have been documented by the presence of bio-archaeological remains, rock art and mosaics (23 species).

### 4.2.1. *Carnivores in the rock art*

The scarcity of bio-archaeological remains makes rock art a useful source for identifying the different carnivores present in Algeria. Not all carnivores have been depicted. We will take the example of a few major sites to demonstrate our approach: Rehayet el-Maiz (Wadi Dermel), Tiout in the Ksour mountains, Sfissifa in Djebel Amour, and Kef Messouer in Nemencha.

- *Rehayet el-Maiz* (fig. 2): one of the most important engraved frescoes in the Ksour mountains. Discovered in 1960 by a French soldier, Sergeant Branthomme (Lhote, 1970; Soleilhavoup and Capderou, 1996), it features hunters accompanied by their herd. Behind them is a lion, which appears ready to attack, given that its claws are drawn. Wadi Dermel where the site of Rehayet el-Maiz is located, is the region where the largest number of carnivore figures have been found (lions, panthers, lynxes and servals). There are no scenes depicting actual attacks.
- *Tiout* (fig. 3): The rock art scenes in northern Algeria (Ksour mountains) show that it was an important gathering point for Holocene human groups. During the Neolithization process, from 8,000 cal. BP., the site attracted and brought together large communities of hunters/pastoralists. Literature on the site has been published since 1847, the date at which the first prehistoric engravings were discovered in the world (Jacquot 1847, Flamand 1921; Frobenius 1925; Vaufrey 1939; Lhote 1970). The large panel presents engraved scenes, identified as a “predation scene” and a “pastoral scene”. This southern face includes 70 figures. The main scene shows a lioness protecting her lion





Figure 2. Lion in sheep attack position, R-Hayet el-Maiz, wadi Dermel (Amara, 2020).

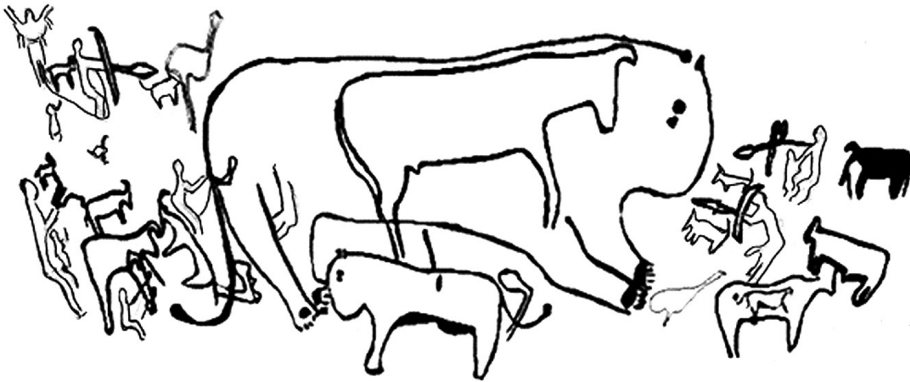


Figure 3. Group of hunters attacking a lion protecting its cub, Tiout, Ain Sefra (Amara, 2018).

cub from hunters who are accompanied by dogs, and armed with bows and arrows, surrounding the lion cub and its mother who seems to have eaten a small bovine. This scene reflects the relationship the Neolithic community had with carnivores, and the rivalry and danger associated with lions.

- *Sfissifa* (fig. 4): A major site for the so-called “monumental” Atlas rock art (Lhote, 1970). The site in the Aflou region (Djebel Amour) features an ocellated panther preparing to pounce on a baby elephant, which the mother elephant



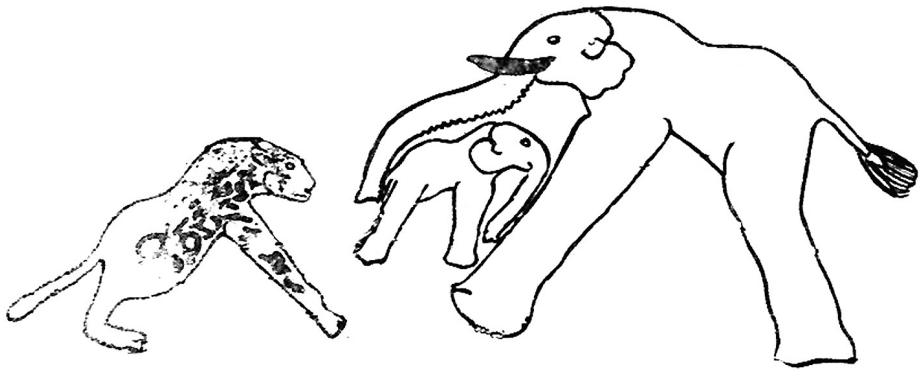


Figure 4. Elephant mother protecting her calf from the attack of a panther, Sfissifa, Aflou (Amara, 2007).



Figure 5. Hunting scene. A lion catches a boar, Kef Messiouer, Sedrata (Lefebvre, 1967).

is protecting with her long trunk. An iconic scene in which danger is depicted. Through this large engraving, the Holocene human communities seem to be sending a message to warn of the danger of this predatory animal and rival of man.

- *Kef Messiouer* (fig. 5): The site is located to the northwest of the city of Sedrata (Souk Ahras), on the right bank of Wadi Cherf, which joins eastern Algeria's intense hydrological network. Three rock art panels can be found in this rock formation. The main scene, overlooking the valley, depicts 8 carnivores and a wild boar (n.º 2) under the paw of the dominant feline. The

dominant lion (n°1) is in the middle accompanied by other felines (n.° 3, 4, 5, 5bis, 7, and 8) and canids (6, 6bis and 9). A new interpretation has been proposed (Roubet and Amara, 2011: 107-124) to explain the “staging” of the site which is considered to have played an educational role in a dangerous situation that Neolithic society was experiencing. The scene at Kef Messiouer becomes emblematic (Roubet and Amara, 2011: 123) of the vigilance called for by herders in the area. This realistic scene shows the strength of the feline, whose weight can be seen by the paw resting on the boar’s stomach. Jackals are on the watch, waiting to take the remains.

#### 4.2.2. *Carnivores in the mosaics*

Post-Neolithic societies underwent some fundamental changes. The geography of the Algerian region was reorganized and fragmented into different zones. The northeast joined the Mediterranean world, while the south and southwest remained attached to continental African traditions (tab. 2). The subsequent construction of a *limes* further accentuated this fragmentation.

The incorporation of part of North Africa into the Mediterranean world resulted in intense urbanization during the first centuries of our era. These upheavals can be seen in the refinement, richness, and diversity of the classical architectural decorative motifs. The floors of wealthy *domus* were adorned with beautiful mosaics, which were one of the hallmarks of Roman art (from the 1<sup>st</sup> to the 6<sup>th</sup> century AD). Beautiful African homes (*domus* and *villae*) housed sumptuous mosaic floors made by the craftsmen of the time, and commissioned by wealthy owners in order to mark their social position with pavements carefully chosen to adorn their buildings (reception rooms/ceremonial rooms and private thermal baths). Such mosaics could be found in the prosperous cities of Numidia and Mauretania such as Cirta, Thamugadi, Cuicul, Sitifis, and Caesarea among others.

The mosaics highlight the diverse range of wild and domestic animals with which humans had a special relationship. They show hunting scenes, animal fights in circuses and amphitheatres, and horse races. Other themes can also be found in the African mosaic art of Roman times: the joys of everyday life and the harmony of the world.

The first theme, happiness, can be seen in the mosaics that portray scenes of laboring the earth, such as the harvesting mosaic in Cherchell (formerly *Caesarea*) the capital of Mauretania Caesariensis (mosaic dating to between the end of the 4<sup>th</sup> and the beginning of the 5<sup>th</sup> centuries). It includes several scenes with domestic animals, and the most important scene in relation to our study shows a dog devouring the entrails of a ram which has been gutted by a butcher (fig. 6) (Dunbabin 1978: 116-117; Ferdi 2005).

The second theme, harmony, relates to the world view as expressed by Greco-Roman mythology, seen in the scenes of the triumph of the god Dionysus. These scenes imply the victory and supremacy of the *cosmocrator*, the civilizing god, over the malignant forces of wild nature (ferocious beasts and felines), as admira-





Figure 6.

bly illustrated in a late mosaic in Sétif (formerly *Sitifis*) (Blanchard-Lemée, 2004: 291-300). Felines, (tigers<sup>7</sup>, lions and panthers) are omnipresent in this mosaic, and are either docile, having been tamed by Dionysus, their master who has harnessed them, or are fighting fiercely against the centaurs, symbolizing the evil forces of the wild (fig. 7b). These felines can be found in most of the Dionysian mosaics: in Lambaesis, in the mosaic at the Tigress House (Malek, 2011: 26-31), in Cherchell in the mosaic of the triumph of Bacchus (Bérard 1936: 151-165; Ferdi 2005), in Jijel in the mosaic of the young Bacchus riding a panther (Dunbabin, 1978: 255) and in Djemila in the Dionysian mosaic (Blanchard-Lemée 1980: 169-181).

In terms of hunting themes, it should be remembered that “the ideal lifestyle of a Roman–African in the classical period revolved around two poles of activity: that of civic activities and trading on the one hand, and that of leisure, that is to say *otium* (intellectual and hunting activities) on the other” (Ferdì, 2017: 27). This explains the many mosaics featuring animal hunting scenes and depictions of mythological animals in all the Roman provinces of Algeria. From the 4<sup>th</sup> century AD, the mosaics begin to show realistic scenes set in hunting grounds instead of the previous mythological hunting scenes. The mosaic artisans continued to extol the virtues and qualities of the “*dominus*”, but in a much more realistic setting, highlighting the aristocratic lifestyles of the wealthy Roman-African landowners, who went hunting on their woodland estates which were home to much wild game.

<sup>7</sup> Tigers (*Panthera tigris*) are not present in the inventory of North African species. They are only depicted in the mosaics.





Figure 7a.



Figure 7b.

In classical antiquity in Algeria, hunting was not just a form of entertainment, but a necessary form of defense: “shepherds were hunters, if only to defend their animals against the predators that threaten to kill them” (Aymard, 1951: 29). Cattle were often threatened by large carnivores (bears, lions, and panthers), farmyards were decimated by *birds of prey*, and crops were ravaged by *wild boar* and *gazelle* (Précheur-Canonge, 1960: 75). The theme of hunting was often depicted in mosaics, such as in the following scenes:

- The mosaic of Chlef, in Mauretania Caesariensis (*Castellum Tingitanum*) which was discovered at a thermal baths, dates to the end of the 4<sup>th</sup> century (Dunbabin 1978: 56, 265). It illustrates two different forms of hunting wild animals on private estates that were known of in antiquity: hunting wild boar on foot and hunting panthers on horseback. Hunting felines on horseback was by nature an imperial and aristocratic activity, which demonstrated the *virtus* of the landowner “hunters” (Aymard, 1951: 318-323)



Figure 8.

The much later hunting mosaic in Djemila (formerly *Cuicul*) in the ancient province of Numidia dates to the middle of the 5<sup>th</sup> century AD. It adorned a ceremonial hall with seven apses in a wealthy house *domus* (Février and Blanchard-Lemée 2019: 153). This large piece (fig. 8) depicts two forms of hunting. Firstly, we see hunting on an estate (in the upper register) led by the master *dominus* on horseback, who is hunting wild boar and deer (with ten tines) on his land amid a landscape of stone pines and pomegranate trees (to express the temporal idea of autumn as a hunting season), accompanied by a hunting hound. Meanwhile, the lower register illustrates two amphitheater hunting scenes: *venationes*<sup>8</sup> (Bertrand, 1987: 211-241) with animal fighters, known as *venatores*<sup>9</sup> (Picard, 1993: 83-92). The mosaic depicts a *venator* fighting a majestic lion after having slain a lioness, who lies dying with her stomach pierced by a spear. Nearby a panther is observing the scene. Another *venator* is already making a victory gesture between two powerful lions. The Djemila mosaic represents the various hunting activities of the *dominus* with a variety of game (a slaughtered boar, hare, deer, and feline). It also demonstrates

<sup>8</sup> The *venationes* lead to the intensive traffic of wild animals from North Africa (lions, leopards, buffaloes, rhinos, and elephants) imported to Rome from the 2<sup>nd</sup> century BC.

<sup>9</sup> The *venatores* were considered as executioner-hunters who presented condemned men to the wild beasts during the *damnatio ad bestias*, a form of torture introduced by Augustus. They were armed with a spear, the *venabulum*. This form of torture was first intended for war defectors by Scipio Africanus the Younger after the destruction of Carthage.





Figure 9.

the owner's euergetism thanks to a superb hunting spectacle –*venationes* with lions and panthers– offered at an amphitheater in a provincial capital. A similar context is observed in the mosaic (fig. 9) in Constantine (formerly *Cirta*) representing the return from hunting on an estate, which portrays several scenes with animals such as a horse pursued by a panther, a lion devouring a bull, a panther attacking a horse rider, and a porcupine (Gsell, 1901; Soltani, 2017).

The *Marcellus* mosaic in Tébessa (formerly *Theveste*), in Africa Proconsularis in the far east of Algeria (Héron de Villefosse, 1886-1887: 234-245; Dondin-Payre 2009: 279-291), commemorates the organization of athletic games. At the same time, in the amphitheater, scenes of wild animals are depicted (wild boar, antelope, bulls, ostriches, and bears) inside cages, suggesting the menageries where the animals were kept to be used for entertainment (Picard, 1993). This kind of fighting was organized by African sodalities<sup>10</sup>. The mosaic shows the emblem of two sodalities that provided lions: the “*Leontii*” and the “*Telegenii*” which are also attested to in an epitaph from Timgad<sup>11</sup> (AE 2006,01798). The particular importance of

<sup>10</sup> A powerful brotherhood that trained and organized hunters while procuring the animals by capture or breeding. This would explain the frequent presence of these felines in Algerian mosaics (Beschaouch A., 2006)

<sup>11</sup> Another epitaph from Timgad, formerly *Thamugadi* attests to the role of a bear guardian or *URSACIO* (AE 1946,00043). Moreover, Pliny the Elder (*Lib, V, verse, 37*) speaks of the existence of bears in Numidia in eastern Algeria in Roman times: “*Ursi numidici*”.



Figure 10.

hunting activities in North African antiquity was largely due to its wealth of carnivorous animals, herbivores and ostriches. The Romans distinguished herbivores “*ferae herbaticae*” from carnivores, which were known as “*ferae Libycae*” or “*bestiae Africanae*” (Picard, 1993).

- The mosaic (fig. 10) depicting the hunting of large wild animals in Annaba (formerly *Hippo-Regius*), in Africa Proconsularis, dating to the first third of the 4<sup>th</sup> century, adorned a vast *domus* (Dunbabin 1978: 55, 238-239; Dahmani 1993: 10, 40-45). It is one of the rare iconographic examples retracing the capture of wild animals for the *venationes* in the amphitheatres, and depicts felines (lions and panthers) and ostriches being pushed into a net using domestic animals<sup>12</sup> (sheep) as bait. It is a perfect illustration of the kind of hunting in which animals were frightened with flames and noise as described by *Oppien* (Cynégét, IV, 112-146). Another scene from the same mosaic depicts the highly-prized lasso hunting of an animal considered to be an onager by some authors<sup>13</sup> (Précheur-Cannonge, 1960: 107) or an African wild ass by others (De Pachtère 1911: 321-347).

<sup>12</sup> The use of bait to attract felines was a hunting technique that was practiced from the Neolithic. Such scenes have been reported in the rock art in Tassili-n-Ajjers and Tassili-n-Ahnet.

<sup>13</sup> It is important to note that the onager or hemione (*Equus Hemionus*) is an Asian species recognizable by the dorsal stripe running from its mane, a detail which is shown by a line in the mosaic, but which is highly debatable, as other asses have a stripe too. African wild asses are recognizable by the transverse stripes on their legs, stripes which the mosaic artist at Hippo-Regius did not include. The question thus arises as to whether the artist depicted an ass that was living in its natural environment or whether they were inspired by a model?



Figure 11.

- Jackals and hyenas are also depicted together in Cherchell in Mauretania Caesariensis in the Orpheus mosaic (De Pachtère, 1911).

In the same city (*Caesarea*), several late mosaics depict wild animals in fight, including a panther tearing its prey apart (an onager), as well as a lion and a deer (House of Venus-fig. 11) (Dunbabin, 1978). In the house with bacchic emblems, a panther is seen preying on a deer, while in the House of *Julii* a scene illustrates a deer and a lion being hunted (Leveau, 1982: 112). In the House of *Peuto*, there is a depiction of a centauromachy with a tiger in the presence of a lion (Albertini, 1924). A tiger is also depicted with an elephant in the *xenia*<sup>14</sup> motifs in the mosaic with Bacchic emblems (Leveau, 1982).

- Dogs are present in the African mosaics as animals guarding the herds or the properties, and above all as hunting companions (for wild boar, foxes, hare and deer), whether in the form of the massive, broad-muzzled Molossian dogs used for hunting wild boar, or the African “*Sloughi*”, a large white greyhound, used for hunting hare and gazelle.
- The mosaic of Daphne and Apollo in Tébessa (*Theveste*) (Leschi, 1921: 101) includes a medallion in which a cheetah is seen leaping on an oryx antelope in a forest represented by a tree (Gsell, 1901: 112)

<sup>14</sup> *Xenia* mosaics are described by Vitruvius (De Architectura, 6,7,4) as an element of the domestic decor representing “the welcome gifts” that the *dominus* offered his *xenoi* (guests) as a mark of hospitality.

## 5. ANALYSIS AND INTERPRETATION

This study is based on two parameters. The first is chrono-climatic in that it examines the carnivorous taxon in terms of the dynamics of extinction, adaptation and appearance throughout the Quaternary. The second is chrono-cultural in that it examines the inclusion of this taxon in the collective imagery of the “hunter/agropastoralist” populations of the last millennia, as seen in the rich iconography (from prehistory to antiquity). Felines are depicted in monochrome/polychrome and in mosaics, either isolated, in packs, or alongside herbivorous mammals.

- *Chrono-climatic aspects*: The climate variations in the Holocene allowed the fauna of the vast grassy prairies of the coastal, Atlas and Saharan regions to regenerate. The final climate crises allowed several species to evolve in a sort of “ecological isolation”, reinforcing the fragmentation of the distribution ranges of the different species. This territorialization appears to have led to a reduction in the diversity of carnivorous animal species. From antiquity, the deterioration in climate conditions, the destruction of the vegetation cover, and human population growth, appear to have resulted in the migration of the last populations of fauna to increasingly remote areas, ultimately leading to a selective regional extinction.

The bone remains discovered during excavations in the 19<sup>th</sup> and 20<sup>th</sup> centuries, have allowed the different species present in North Africa to be established and confirmed. Felids and canids are the dominant taxa. They have been discovered at paleontological sites and prehistoric settlements, demonstrating the proximity of these animals with the human world. This fauna, which gradually became scarce, appears to have been present in the daily lives of these sedentary, urbanized populations. The last millennia were marked by the overexploitation and hunting, mainly of felines, leading to their permanent extinction in the 20<sup>th</sup> century<sup>15</sup>.

- *Chrono-cultural aspects*: The count made from the iconography presents the last carnivores found in the ecosystem (Tab. 1). This fauna reflects the biodiversity that survived until late in rare ecological niches. During the pre/protohistoric and classical periods, the numerous depictions (rock art and mosaics<sup>16</sup>), demonstrate the status attributed to carnivores. In the rock art, felines and canids are the main species found alongside wild mammals (elephants, rhinoceroses, giraffes, hippopotamuses, buffalos, bovids, antelope, gazelle, and wild boar), and domestic mammals (cattle, sheep and goats). In the large mosaics, these same species can be observed in hunting

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<sup>15</sup> In 2020, cheetahs were reported in the greater Sahara, as well as canids, hyenas, genets and other species.

<sup>16</sup> Atlas deer (*Cervus elaphus barbarus*) are depicted only once in the east of the Ouled Nail mountains. Wild asses (*Equus asinus*) are featured in many rock art scenes. Both species can be seen in the mosaics in Cherchell and Annaba.



scenes and circus games. North Africa was an important supplier of animals to the empire.

These upheavals in human behavior heralded the establishment of new economic forms, in which felines (lions and panthers) and dogs had a special status. After the selection of plants and animals for food (cattle, sheep, and goats), humans developed new relationships with carnivores. People established protected areas to better defend themselves against these carnivores and to organize the exploitation of the resources in their territories. The rare bio-archaeological remains, rock art depicting these animals, and later mosaics indicate the beginnings of a new form of exploitation of carnivores by Neolithic groups and the urban societies of antiquity.

- *Data from pre/protohistoric archeology*: The Neolithic sites offer us rare clues in their ancient levels, where domestic animals can sometimes be found in association with wild fauna (tab. 2). The population dynamics from the Neolithic were probably the cause of environmental changes. Table 1 clearly shows these changes, highlighting the extinction of certain species, including some large mammals, and the introduction of new species. Among the listed species (felids, canids and small rodents), several survived in Algeria until the arrival of the first urban societies (Metal Ages). The extinction of species differs from one area to another. The eastern and coastal regions of Algeria were the first to experience an initial form of extinction caused by human factors (tab. 1). It is likely that beyond the barrier of the Atlas mountains, the climate factor also led to a reduction in fauna. In any case, we have a compelling body of documentation offering a complete overview of the Holocene ecosystem.

Groups of hunters can easily be distinguished from groups of herders and post-Neolithic proto-urbanites. These groups are often shown in feline hunting scenes, accompanied by canids and other animals (fig. 3). Many other hunting scenes depict the techniques used by men to capture lions with a sheep as bait to trap the feline (Tahihaout, Tassili-n-Ahnet, and central Sahara) or depict felines attacking the herds. All these themes serve to express the danger or rivalry that the animal represented. Neolithic craftsmen made beautiful frescoes by copying nature or drawing inspiration from the early myths of Neolithic societies that were developing in North Africa.

- *Data from classical archeology*: Eastern Algeria became urbanized very early on. Diverse mosaics feature a variety of animals<sup>17</sup>. It is important to point out that a real economy based on trading animals was in place. These animals were hunted, and the mosaics illustrate these hunting scenes, whether the

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<sup>17</sup> North Africa is cited as the main provider of wild animals to Rome in the 2nd century BC (Bertrand, 1987). From the 1st century BC, the organized hunting of wild animals developed. Its objective was to provide Rome with felines and other animals for amphitheater games. Ancient sources spoke of North Africa as Rome's supplier of wild animals (Petronius, *The Satyricon*, CXIX.14). Pliny the Elder (*Book V. 37*) also attested to the existence of bears in Numidia "*Ursi numidici*".



hunting of animals on private estates or animals that were captured in amphitheaters. They also depict scenes from rural life, which include wildlife and carnivores. From antiquity, this intensive animal trade probably caused the gradual disappearance of certain predators in Algeria and North Africa. History bears witness to the case of 400 lions, which, like so many others, were sent from Mauretania by *King Bocchus II* to his ally *Caesar* for amphitheater games, after his triumph in 46 BC (Suetonius, xxx vii). Before him, *King Bocchus I* offered 100 maned lions to *Sulla* for amphitheater fights after *Jugurtha's* capture (Pliny, 53).

The wild animals they hunted were present in their environment. The hunters were sometimes accompanied by dogs—the only domesticated carnivore. Later on, humans encountered carnivores either in freedom when hunting on their estates, or in captivity at the amphitheater games that were so popular with the inhabitants of the large cities in the Afro-Roman provinces. Dogs, as a domestic animal, were primarily encountered as the faithful companions of farm owners or as highly useful hounds for hunting hare, gazelle and wild boar. Craftsmen on both sides of the *Mare Nostrum* made beautiful mosaics copying nature or drawing inspiration from the legends of Greco-Roman mythology.

## 6. CONCLUSION

In re-examining the iconographic documentation and the sites concerned, we have been able to propose a new reading. A significant list of mammals has been identified for the Holocene in Algeria. The scarcity of bone remains is offset by a rich iconography that can still be seen today in the many rock art scenes, which demonstrate the presence of diverse animal species. These were original creations, made by Holocene populations in transhumance in the pastures. These human groups left their mark on the sandstone walls of these rock shelters, a symbol of their small community of hunters/pastoralists. They chose enclosed spaces to protect their herds and sought to create limits between their territories and those of carnivores.

This rock art allowed a collective consciousness to assert itself, a group identity to be constructed, and the first human societies to leave their mark on the site. The same subjects were reproduced by craftsmen in urban settings with the many mosaic floorings in the cities of antiquity.

We can consider these sites a place of memory for hunters/pastoralists. Rock art allowed them to portray their natural environment through pictorial messages that gave an originality to these anthropized spaces. These sites could have been a point of confluence for the different groups, who explored them thoroughly, each leaving their own unique marks.

Of the 58 species of fauna that were present during the Holocene (wild and domestic), 21 species are visible in the rock art inventory, this number being reduced to 14 species in the mosaics. The start of the Holocene was marked by an overall



reduction in fauna, but at the same time it saw the arrival of new domestic species such as sheep (*Ovis*), goats (*Capra*), horses (*Equus caballus*) and camels (*Camelus dromedarius*) (tab. 1 and 2). The extinctions that took place during the Holocene were due to two main factors. The first factor was climatic due to the drying up and silting up of the long rivers used by the animals. This was fatal to them in their migratory movements, leading them to retreat to the few remaining more welcoming ecological niches. In the 3<sup>rd</sup> millennium (protohistoric times) aridity set in definitively and was indirectly responsible for the reduction in fauna. The second factor was human, due to the intensive hunting that developed around wild fauna and the urbanization of these regions during antiquity.

As North Africa joined the Mediterranean world, a lucrative trade in wild fauna developed to supply the Empire's circus games and menageries. This new reality, which took shape during antiquity, is visible in the mosaics, which bear witness to these new cultural practices. This historical milestone heralded the systematic selection of large felines to meet the demands of circus games, wealthy figures and feline hunting parties. As the populations of urban communities grew, these new behaviors spread. Feline hunting became a prestigious and lucrative sport, as reflected in the many mosaic floorings.

This iconography demonstrates the selections made within the carnivore family. Felines were captured and other carnivores that had no particular value were killed when they approached the human environment. Only dogs (canids) were accepted as hunting companions and for protection against attack. The rock art and mosaics tell us about the behavior of the Romanized Neolithic and African populations towards carnivores, to which they accorded –particularly felines– special status.

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