Oriental Morocco: Hundreds of Thousands of Years of Humanity

Guided and commented tour of the palaeolithic habitat

by
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« The quality we strive for is also, as We have already emphasized, authentic and responsible tourism. Whether in its natural, human or cultural dimension, the development of responsible tourism is the guarantee of the sustainability of the sector. It is our duty to contribute to preserving the environment in all areas and to frame our projects in an approach that unites tourism development and the protection of the environment and natural resources ».

Excerpt from His Majesty King Mohammed VI's message
to the participants of the eighth Tourism Conference
Tetouan, June 14, 2008.[*]

(*) Translation of the editorial staff

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FOREWORD

This guide is an invitation to learn about and discover an important part of the Oriental region's heritage. It is part of a collection of books which includes two other publications:
• «Randonner dans l'Oriental Marocain» («Hiking in Oriental Morocco»), a guide dedicated to those who enjoy walking, but especially for people who come to meet the inhabitants, learn about their way of life, their know-how, all at a pleasant hiking pace;
• «Routes & Saveurs de l'Oriental Marocain» («Routes and Flavours of Oriental Morocco»), which offers the opportunity to discover the Oriental region via its local products, food resources, regional recipes and dishes… in short, its gastronomy.
Other guides are in the works, each aimed at promoting one of the many aspects of the regional heritage.

Understanding, discussing and writing about these topics, making them available to knowledgeable enthusiasts, requires, to be credible, an internationally recognized level of competence. This is herewith ensured thanks to the resources of the Mohammed I University in Oujda, its research units, its partnerships with the best national and foreign institutions producing true, internationally developed, regional archaeological knowledge.

With this publication, the Agence de l'Oriental seeks to build up the region's image and the notoriety of its heritage. Clearly, the goal is to stimulate cultural and discovery tourism, particularly benefitting the regional hinterland. Ours is an invitation to travel the region and discover, without emphasis, the cultures that underpin its diverse identity.

Following the conclusions of the COP 22, and at a time when the General Assembly of the United Nations, in its seventieth session, declared 2017 as the international year of sustainable tourism, our region offers targeted tourism, respectful of human, cultural and natural environments… a desire to implement the high royal guidelines for sustainable and responsible tourism, as cited in the opening pages of this book.

In the Oriental, one finds the natural complement to our two seaside resorts, Saïdia and Marchica. Delightful and enriching pleasures await anyone interested, in the form of a rewarding and entertaining journey, an instructional aside to our beautiful, relaxing beaches and the leisure of our resorts.

Others, scientists or archaeology lovers, will undoubtedly come for this purpose only. All are welcome. This guide offers a precise and up-to-date reading of our research and discoveries and creates a deep desire to come discover our region and its human presence that has, through the ages, always relied on its amazing resources.

At the crossroads between two continents, although the human migrations that led to the occupation of North Africa and Europe by the «modern man», *Homo Sapiens*, are still the subject of debate and uncertainties, our region provides some answers. This is probably why many scientists around the world closely follow the publications of their peers in Morocco, thus seeking to understand how this vast geographic area was populated.

The region is proud of its longevity and its role reaching back to the birth of humanity. The Agence de l'Oriental is proud to promote this and to make it a vector for economic and social development, thus following and once again implementing the mandate from the Royal Initiative for the Development of the Oriental, the foundational text which guides the region's continuous progress.

This guide promotes some twenty sites upon which knowledge is built, often thanks to excavations. Yet only a small part of Oriental Morocco's archaeological sites are discussed here. Here, archaeology has a long history but its story has only just begun.

May this practical and instructional, contribute to promoting this amazing chapter of our history and our heritage.

Mohamed MBARKI
Director General of the Agence de l'Oriental

MILLIONS OF YEARS TO PREPARE A HABITAT FOR THE FIRST HUMANS!

The living conditions for prehistoric humans were created by a very long process, notably in Oriental Morocco. Today, science explains this process and provides keys for understanding the landscapes we still see today.
Without this series of phenomena…
Thankfully, Oriental Morocco's generous nature offered, when the time came, all the resources needed for the first humans who tread its ground, including its famous caves.

Karstic Landscapes: the origins of the caves

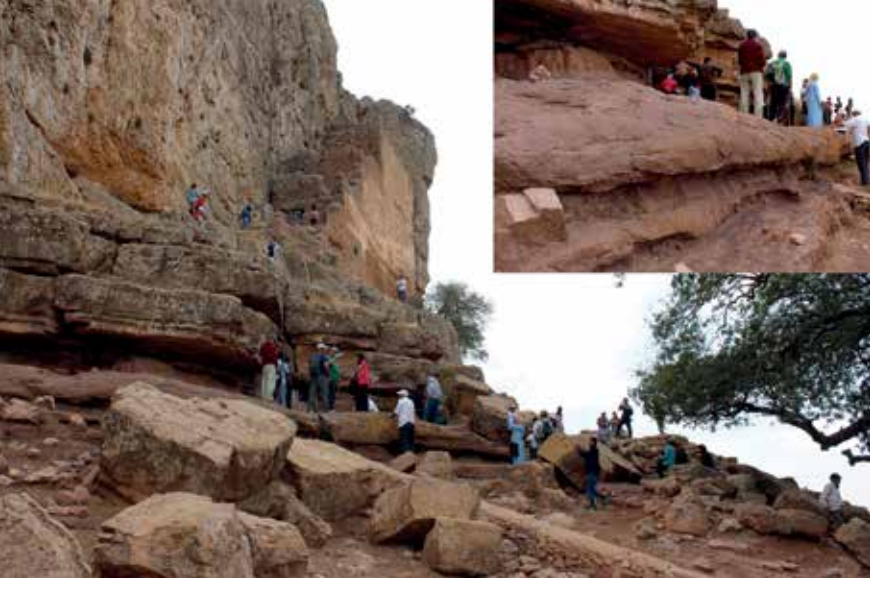
The karst landscapes are shaped from carbonate formations (limestone and dolomites), attacked by rainwater turned slightly acidic by taking on carbon dioxide (CO_2) and decayed organic matter. This water infiltrates through these rocks and chemically alters them.
Water circulation is often facilitated by tectonic action, which creates deformities in the rocks by breaking them, producing cracks, faults and other tectonic structures. When the water, which penetrates deeply through the limestone, is stopped by impermeable geological formations (such as layers of marls or clays), it attacks the limestone horizontally until it finds an exit; it can thus emerge in the form of a water source. The hydro-chemical action, which, in carbonates, takes place over very long periods of time, results in the formation of cavities that vary in size and shape.
The calcareous formations, chemically attacked in depth, contain subterranean cavities, sometimes very large, which can collapse (thus opening up «karst sinkholes»), or otherwise evacuate their water to become caves, the first habitats of prehistoric humans.

In front of the Grotte des Pigeons (near Tafoughalt), caves and cliffs, as well as a beautiful stratigraphy, resulting from the water's activity and rock tectonics. Photo : Y. Fizazi

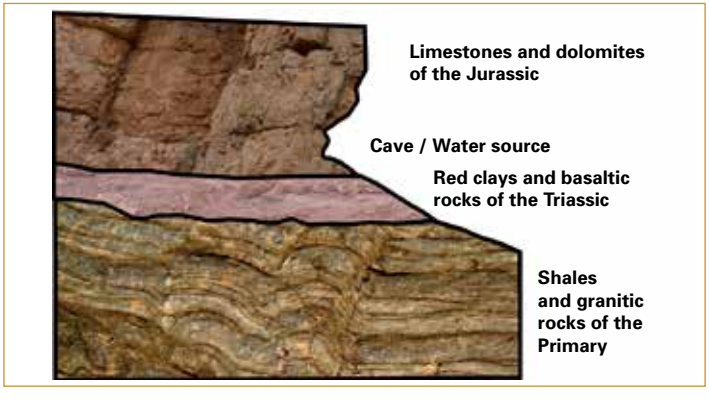
Dissolving calcareous rocks to form tuffs and travertines

As for the infiltrated water, it is loaded with dissolved limestone that can be precipitated in other areas in the form of stalactites, stalagmites and various other limestone deposits creating spectacular forms.
When the water emerges, enriched with lime carbonate as it travels through the carbonates, it allows the formation of concretions in the form of travertines or calcareous tuffs.

Travertines with plant residues at Aïn-Bni-Mathar. Photo : E. Talbi



The water stored by the limestones of the Jurassic (cliff) is restored as a source at the boundary between these limestones and the impermeable red clays of the Triassic. Photo : E. Talbi



Schematic cross-section: layout of the geological formations that favored the formation of caves and the availability of sources and materials (flint), favorable conditions for the installation of prehistoric humans

The environment in which these tuffs are formed is generally characterized by quite luxuriant vegetation, due precisely to the abundance of water.
Consequently, the concretions formed in this way often have trapped plants, which remain fossilized in the tuffs, as shown in the photographic illustration at the bottom of the previous page.

Millions of years of geological history from ideal conditions

Nature's work to create a favorable environment for the settlement of prehistoric groups (with caves, fresh water, game, etc.) began several million years ago. Indeed, the Oriental's geological landscape is characterized by an ideal stratigraphic layout, which has allowed for the profusion of caves, the abundance of fresh water springs and lush landscapes where game abounds.
Several simultaneously occurring conditions were key in arriving at this layout:
• limestone plateaus which allow rainwater to penetrate like a sponge;
• a watertight level at the base of these limestone rocks to stop the water that infiltrates deep down;
• a humid climate favouring abundant rains;
• the availability of geological materials suitable for the lithic industry.
It is not by chance that all of these conditions were present in Oriental Morocco, it is simply the result of a long geological history.

A long and extraordinary history in preparation for the arrival of the first humans

At the end of the Primary Era (250 million years ago), the geological landscape of Oriental Morocco was dominated by crystalline metamorphic and magmatic formations rich in hard siliceous rocks.
During the Triassic (between 250 and 200 million years ago), these Palaeozoic fields were overtaken by the sea: this corresponds to the great marine transgression, which also coincides with the opening of the Atlantic Ocean, separating the African and American continents.
Very fine sediments were deposited in the more or less deep sea that then settled: red clays (often with basaltic rock intercalations).
Shallower sea conditions in the Jurassic (between 200 and 150 million years ago) favoured the formation of carbonaceous rocks (limestones and dolomites) above impermeable clays.
At the beginning of the Cretaceous period and until the beginning of the Quaternary, these conditions allowed various rocks, predominantly detrital, to be deposited. The material for these rocks came precisely from the erosion of earlier grounds.

Finally, the Quaternary ready to welcome the genus Homo

These events shaped the palaeogeographic layout of the Quaternary - a period that began 2.6 million years ago, marked by the appearance of the genus Homo.
The landscape was characterized by raised lands of karst carbonate, offering:
• caves and water reserves;
• valleys with fertile soils which allowed for the development of lush vegetation
• freshwater sources at the base of the carbonates, even at high altitude.

THE PALEOLITHIC ERA IN ORIENTAL MOROCCO: AT LEAST A MILLION YEARS OF HUMANITY

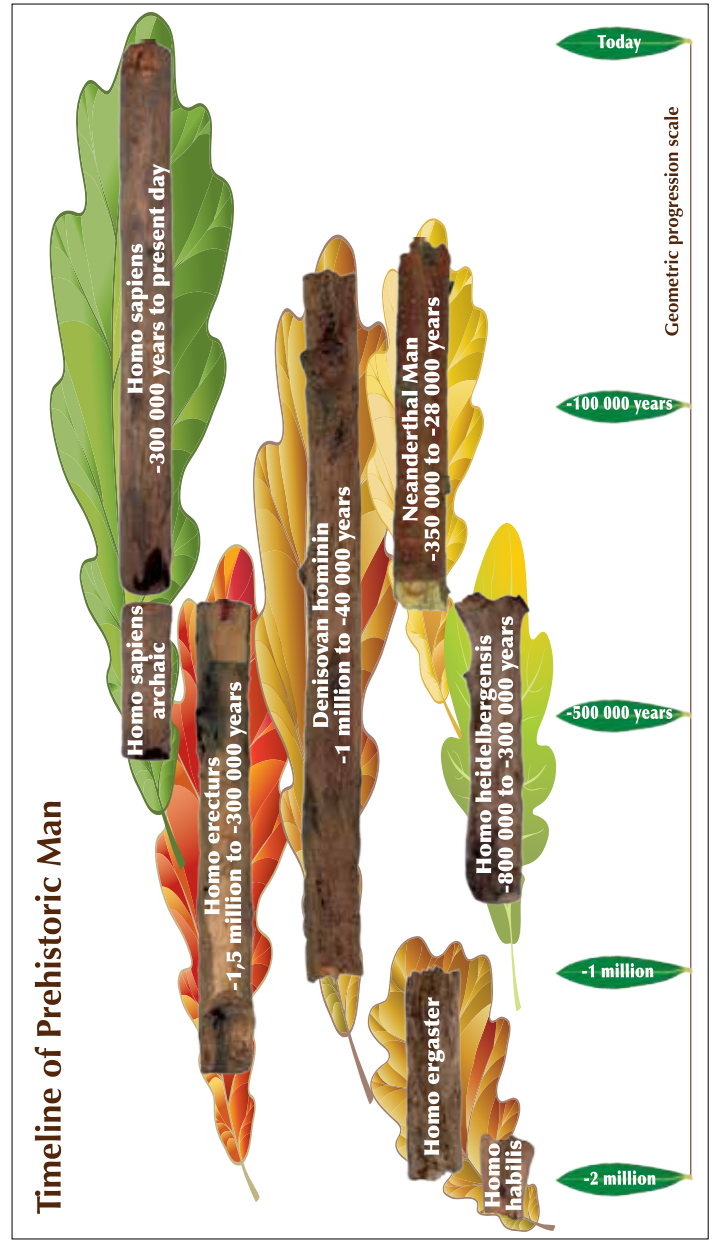
The archaeological sites excavated in Oriental Morocco tell a tale of the presence of humans lasting a million years in the region. Yet these are only the discoveries made so far and excavations are still in progress. Much – perhaps the most important part – remains to be discovered, not to mention the listed sites where excavations have not yet begun. However, the continuity of human presence and the wonderful dynamics of population, in complete symbiosis with the changes in the environment, seem well established.

Lower Moulouya and High Plateaus: Transhumance spaces for early arrivals

Thanks to archaeological discoveries made since the beginning of the 20th century, Oriental Morocco is recognized as one of the cradles of the first human activities in Morocco. Recent research in the areas of Ammorene (eastern Rif), Oulad Mansour, Ain Mellah (lower Moulouya valley) as well as the Aïn-Bni-Mathar/Gafaït region provide increasingly solid evidence that the presence of humans on Oriental soil could date back well over a million years.

Although the area has not yet delivered such ancient human fossils, the tools made by the first arrivals in the Oriental have been clearly identified and resemble what was found elsewhere, in East and South Africa.

Thus, a little more than a million years ago, *Homo Erectus*, the upright human, populated the Oriental's plains and high plateaus, landscapes which were rich in water resources, game, and especially certain essential raw materials such as flint and quartzite, used to make tools.



These stone tools - mostly handaxes found abundantly in Ain Mellah, Oulad Mansour and Ammorene - were probably used to strip animal carcasses and smash their bones to extract the marrow.

Homo Erectus conquers the Oriental

Once on Oriental soil, *Homo Erectus* was able to quickly adapt to their new environment, similar in some ways to that of East Africa about 2 million years ago.
Thus, they only sparsely populated the caves and settled mostly along riverbanks and areas with gentle slopes, in order to track game and to take shelter from various predators.
The latter were stronger: *Homo Erectus* was barely 1.60 meters tall, weighed about 50 kilograms and lived in small groups. Discovering the habitats of these first arrivals is perhaps just a question of time; these probably consisted of huts or shacks, held by poles that could leave traces in the soil even after thousands of years, as evidenced elsewhere in Africa and Europe.
Sites near Oued Kert have shown that, around 500,000 years ago, *Homo erectus*' tools had become thinner and had more punctilious handaxe points.
This indicates that their function had changed: had they gone from fracturing bones to hunting activities?

Homo Sapiens reigned from Touissit to Al Aroui for over 150 000 years!

If one is to believe the anatomical data, *Homo Erectus* was already heralding its successor, *Homo Sapiens* or Modern Man. This lends support for the idea of the continuity of human population in Morocco in general and in the Oriental in particular, for more than a million years.
100,000 years ago, the landscape of modern man was characterized by forests on the mountains, the steppes, and the High Plateaus of the Oriental, in a humid and warm climate. Groups of humans traveled through forests of wild olive and carob trees, which were replaced by thuya cedar about 90,000 years ago, heralding a colder, more arid climate. These different species were used to light fires, a «technology» well mastered by modern man.
Discoveries in the Rhafas cave (Angad Territory, Touissit) have shown that human groups of this period sometimes hunted big game, such as rhinoceros, but also hunted other herbivores such as elk, oryx, gnu, gazelle, ostrich, hartebeest, warthog and horse.
Once well established in the Oriental (where its earliest traces have been identified in Ifri n'Ammar, Tafoughalt and Rhafas), Modern Man, representing Aterian culture, populated vast geographical spaces, from the Tebessa region in Algeria to the Golf of Gabès in Tunisia, including the Jebel Gharbi and the Libyan Sahara, not to mention Egypt in the East and the Niger in the South.

First weapons for fighting at a distance

It is in Oriental Morocco – specifically in Ifri n'Ammar – where traces of the first pedonculated parts, arrowhead armour fastened to javelin- or arrow-type supports designed for hitting distant targets, were recorded.

Aterian pedonctulated piece from the Tiffert site, near Berkand, dating back at least one hundred thousand years - Photo: Y. Fizazi

This invention changed the course of history for mankind because for the first time, humans were able to get the upper hand on big game without any direct or close contact which could potentially be fatal!
These new tools rapidly spread over the Oriental territory, such as in Tiffert, Tendrara, Aïn-Bni-Mathar in the mountains of Oujda, and around the Al Aroui and Boutawid. They also reached Egypt in the east and the Sahel in the south.

The sophistication of hunting weapons undoubtedly diversified game. The Barbary sheep roamed the rugged areas of Ras Asfour, Beni Snassen and mountains of Oujda: it was thus very abundant in Oriental Morocco.
But Aterial human groups had a particular preference for small and medium sized adult gazelles, a kind of hunting specialization, as well as a certain way of preserving livestock.
They also hunted primitive ox, buffalo, horse, wild boar, warthog, hartebeest, hippotragus, oryx and ostrich.

Oriental Morocco: world «symbolism» site

Around 100,000 years ago, Modern Man of Oriental Morocco (specifically in Beni Snassen) invented ornamental objects by perforating marine shells, usually Nassarius gibbosulus, while covering them with red ochre and sometimes exposing them to fire to give them a shiny black colour, thus obtaining ornamental objects with several colours!
Apart from their purely aesthetic interest, ornamental objects – particularly of this marine type – were sought, perforated, worn and probably traded over long distances!
Thus, while the earliest examples were found in the «Grotte des Pigeons» near Tafoughalt, the same family of molluscs was used in South Africa and the Near East, sometimes a few thousand years later.

This suggests diffusion from a central location… perhaps located somewhere in the Oriental!

Pebble (about 8 cm in diameter) used to grind red ocher

Bone fragment used to prepare red ochre

The movement of such objects over vast spaces indicates a shared heritage, an identity and common values. Unlike tools, which can be reproduced identically by imitation, symbolically and «aesthetically» loaded adornment requires articulated language - words to explain the value of things and to allow them to be transmitted to future generations, until the present day.
Mightn't the jewelry worn in Oriental Morocco, such as «Zerrouf» or «Krafache», find their origins in the palaeolithic ornaments of 100,000 years ago?

From Oriental Morocco to Europe: trans-méditerranean trade 25,000 years ago!

25 000 years ago, a severe climate crisis – severe drought – struck all of North Africa and Oriental Morocco was no exception, although the effects were felt to a lesser degree.
The flow of large rivers, such as Moulouya, Oued Za, Oued El Hay or Oued Isly, decreased considerably. The forests diminished significantly (some disappeared) giving way to open landscapes resembling those where the plant locally called «tawssaya» or «halfa» in other localities, are found.
Game had become scarce and the coast between Saïdia and El Hoceima could offer only seashells, an insufficient food source to meet the needs of human groups whose numbers had continually increased.
It thus became necessary to migrate to other areas offering more favourable living conditions, the result of which was the presence of humans on the European continent, coming from Africa via the Gibraltar Strait and giving rise to a cultural and «technological» mix!

Indeed, spikes of the Solutrean (Palaeolithic culture of Europe very present in southern Spain and southern France) bear a strange resemblance to those of the older Aterian.

From Tafoughalt to Ifri n'Ammar : birth of «social cohesion» 22,000 years ago!

22,000 years ago, the Oriental (like the rest of Morocco) experienced population growth with the beginning of the return of more favourable climatic conditions; oak forests developed, indicating a climate which was once again humid. Then, little by little, other species, such as pine, colonized the heights of the Oriental, along with wild legumes and juniper, which arrived with the semi-arid climate.
This also favoured the development of a specific fauna (gerbils and meriones, currently common in steppe areas and deserts), Between 10,000 and 8,500 years, the current natural vegetation would have taken root.
From Ahfir to Ras Asfour, the fauna sought by the hunters of the Upper Palaeolithic – also called Ibero-

View of the Beni Snassen massif: a landscape with sparse Mediterranean vegetation, characteristic of a climate that has become semi-arid

maurusians – usually included the golden jackal, brown bear, gazelle, Cape hare, hedgehog, ostrich, horse, and especially the Barbary sheep. The latter was very much a part of the Iberomaurusian diet and was often placed as an offering in their burials!

The population growth of Iberomaurusian groups was also reflected in the presence of large funerary areas, such as the necropolis of the «Grotte des Pigeons» in Tafoughalt.

The study of burials clearly reveals the presence of a social hierarchy, because some burials are more punctilious than others, indicating that during their lifetime, individuals did not have the same social ranking.

On the other hand, other human fossils show traces of debilitating pathologies that could only be overcome with help from the group. The sick were cared for by people who certainly had good knowledge, especially of the human skull, since some bore traces of trepanation, including one considered to be the oldest in the world!

About 7,000 years ago, a strong socio-economic transformation took place, because the last palaeolithic groups gradually abandoned hunting and gathering activities in favour of agriculture and domesticating animals: this was the Neolithic or the «New Stone» age! A period rich in inventions and interactions between humans and their environment.

View of Jbel Tamjout from Zegzel - Photo : Y. Fizazi

THE BENI SNASSEN MASSIF

Photo : Y. Fizazi

View from the Almou Pass onto Waklane, the Triffa plain and beyone, the Mediterranean on the horizon
Photo: Y. Fizazi

The Beni Snassen Massif is a stronghold jutting to the right of the Rif linking it to everything.
However, its height, although average, gives the impression of a fortress surrounded by water (the Mediterranean in the North, the Isly and Kiss Wadis and the Moulouya). The schist and granites often only reveal the thick sedimentary mantle; we see limestones and dolomites on the horizon.
The dimensions of this East-West facing fold do not exceed 100km. The Massif is home to a Site of Biological and Ecological Interest of more than 7,000 hectares.
It has an exceptional variety of plants that are beneficial to humans: more than fifty endemic plants are listed there. It is not a stretch to think that this diversity was far greater in remote Palaeolithic times.
Thus, in addition to abundant and varied game, *Homo Sapiens* could find enough to satisfy taste buds as well as resources for a diversified pharmacopoeia.
Still today, terraces, even the smallest plots that are somewhat flat, and even more difficult lands, are cultivated with care, giving the landscape a lush green aspect with an abundance of sources so important to humans since prehistoric times.

THE GROTTE DES PIGEONS
A MEMORY FOR HUMANITY

Of worldwide notoriety in archaeological circles, the Grotte des Pigeons collects «world firsts»: oldest known trepanation, oldest identifiable tooth decay, oldest adornment… not to mention the wealth of teachings on funerary rites, food practices and even some aspects of the sociology of Sapiens human groups.
Excavated since 1939, the site has far from revealed all of its secrets and generations of researchers have followed…

DIRECTIONS

> From Berkane, follow the Tafoughalt direction, or, from Oujda, follow Sidi-Bouhria then Tafoughalt (55km by the road to Taza). There are signs in the center of Tafoughalt and the site is just minutes away.

The approach to the Grotte des Pigeons site confirms its strategic location

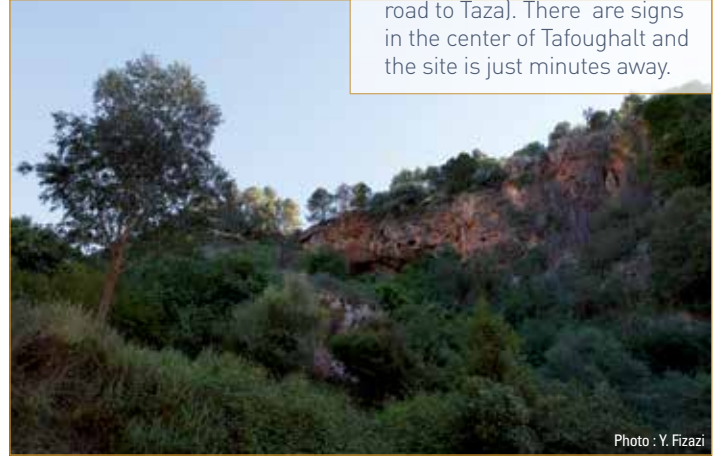
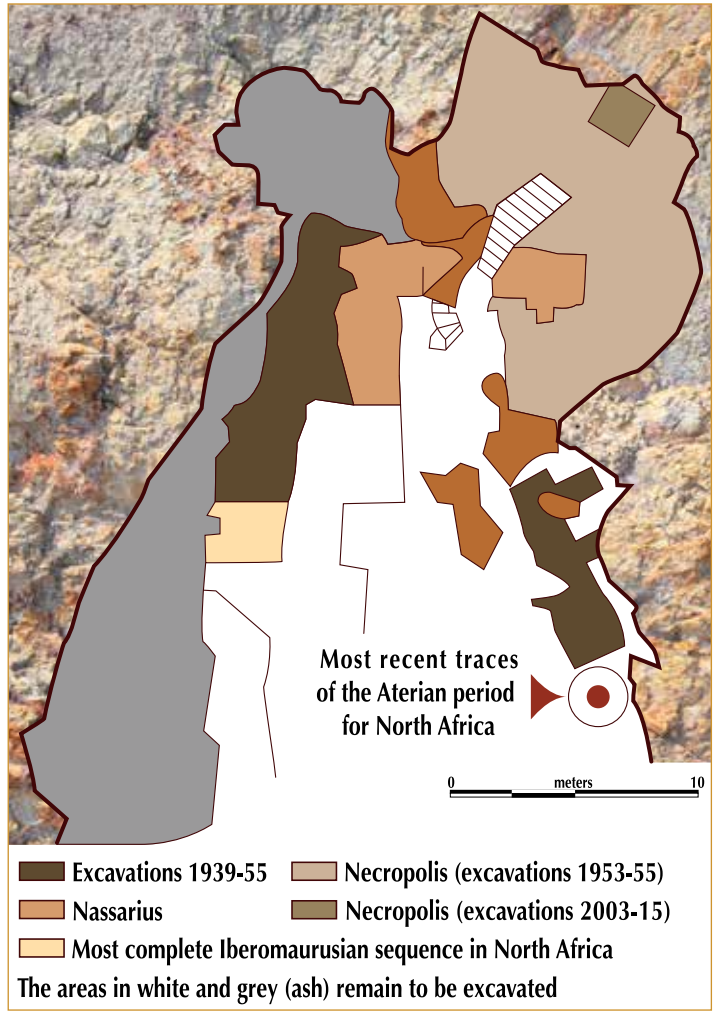


Photo : Y. Fizazi

A short summary of a long history

The Grotte des Pigeons was reported in literature for the first time in 1908. However, it was only decades later that significant excavations were conducted, particularly by abbot Jean Roche beginning in 1951, on the «prehistoric antiquities» of the time. He uncovered a necropolis (nearly 200 bodies) and recorded a good part of his works in his university thesis: «The Moroccan Epipaleolithic».
Beginning in 2003, systematic excavation work was carried out under the auspices of INSAP (see addendum).
The analyses were then based on several scientific approaches using the latest knowledge and technology. These were combined, at the time of the excavations, to date the oldest samples of the Aterian Paleolithic, more than 100,000 years old.

The Grotte des Pigeons is now known worldwide and scientists from the archaeological sphere are spellbound; communications from Moroccan researchers are closely followed and we expect many answers to questions about the life of the first Sapiens, specifically in North Africa, from this region.



An exceptional site

The place is strategic, almost in the military sense, as it enjoys a wide view, overlooking a vast surrounding space, and one can easily observe the wild animals or other human beings approaching as well as weather disturbances or fire, for example.
This observatory is accessible without any great obstacle, except for an ascent that an unfit walker might find somewhat steep.
The threshold is practically at the same height as the level of filling

Grotte des Pigeons : the layer of ash (grey) shows the ground level at the beginning of the excavations

of the cave caused by millennia of occupation for multiple uses. Still today, the surface of a quasi-flat layer of ash depicts what was seen by the first archaeologists as the ground level of the cave (the «natural» terrain level in the architectural sense); it has been preserved. At a right angle there is a large excavation – tens of cubic meters – the result of meticulous excavation work which began nearly 80 years ago. Occasionally interrupted, these excavations have now been continuously carried out since 2003.

Discovered «treasures»

The Grotte des Pigeons was, alternatively or simultaneously, a workshop, a kitchen and eating area, also a necropolis, and a place for cultural or even spiritual activities, or perhaps for «care» if that term can even be applied to some of the interventions applied to the human body.

View from a moderate distance : only the top part of the entrance to the cave is visible

• a trepanned skull

This was the great discovery that gave the cave worldwide notoriety. This individual is at the origin of the expression «The Tafoughalt Man». This skull clearly shows the beginning of bone reconstruction: the operation was therefore not fatal.

It produced new findings and confirmed others. Evidence was found of the practice of dental avulsion, rituals (marking bodies with red ochre, presence of mountain sheep horns around them, for example) and a certain social hierarchy, with certain bodies having been displaced without much respect, whereas one of them (young adult approximately 16 years old)

The skull of the "Tafoughalt Man", front face (left) and back (right) clearly showing the trepanation hole

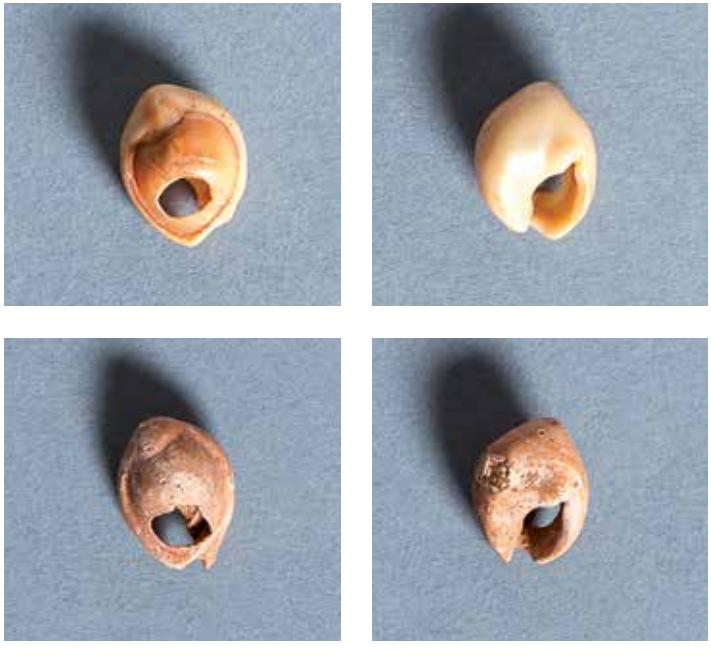
What could have been the purpose of this trepanation?
Which person, of an undoubtedly exceptional rank, was considered qualified for this type of intervention?
The mystery remains[1].

• 200 buried bodies

The discovery of this necropolis in the 1950s clinched archaeologists' enduring interest for the cave.

Gazelle horn uncovered at a burial site

(1) Copy (molding of the original) can be viewed at the Rabat Archaeological Museum
Photo : Y. Fizazi



Perforated Nassarius shells in the Grotte des Pigeons used in the making of original adornments

was buried in an almost seated position, held and surrounding by mountain sheep horns. This animal, abundant at the time, thus had a more complex and symbolic status than its prosaic role as a source of food.

• adornments, aesthetics, symbols…

The oldest known ornaments come from here: dozens of perforated mollusk shells, carefully selected, some of them dating back more than 100,000 years, as well as elements of necklaces made of stone or eggshells (ostrich, in particular). The Nassarius shell was preferred, a gastropod from the shallow bottoms of the Mediterranean.

It wasn't exactly an essential food source, so why was it chosen? Aesthetic value, symbolic value, shamanism ...?

Necklace made of fragments of ostrich eggshells
Photo : Y. Fizazi

Scientists have not decided, but also note the less prevalent presence of other marine mollusks, such as the Cardium, probably also intended for ornamental objects.
Even if the hunter-gatherer was not put off by walking, gathering and bringing back this specific selection of shells, still required covering a good 50 kilometers.
This type of ornament, or other, very similar ones, are only found in a few parts of the continent.

• Artisan tools

Tools of stone, bone, wood… the Grotte des Pigeons yielded bifacial points, needles, and many other things, among which a limestone plaque engraved with mountain sheep horns, used as a grinding wheel.

• the gourmand's teeth

Another «world first» found in the area: the oldest tooth cavity! It is attributed to oak acorns, rich in

Bone needle (approx 15 000 years, INSAP coll.)

(Drawing by archaeologist Jean Roche)
(Photo : Abdeljalil Bouzouggar)

Engraved limestone plaque (sheep horns visible) used as a grinding wheel

Bone tools (Rabat Archaeological Museum) - Photo : Y. Fizazi

Aterian tool (over 100,000 years)

carbohydrates, which the inhabitants of the Beni Snassen caves used cook and chew, especially if game was rare. This food resource reveals the start of a more sedentary lifestylea, almost 15,000 years before our era, long before the Neolithic.

• the children's cemetery

A surprising fact about the first necropolis was that the buried individuals were mostly adults.
One possible explanation might be found in the recent discovery of a dozen tombs of children, marked with blue limestone at the back of the cave; an obvious but unexplained separate treatment.

A very rich biotope

The average altitude (800 m) of the Grottes des Beni Snassen and in particular the Grotte des Pigeons has always favoured a significant relative humidity of the sites, which were once naturally endowed with dense and diversified vegetation. This favoured a proliferation of game as well as all kinds of plant species, including some which would today be called «aromatic and medicinal» plants: a setting favourable to early humanity.
An analysis of the animal bones found in the cave shows that *Homo Sapiens* hunted and ate large herbivores (such as horses, zebra, mountain sheep, gazelles), but also birds (including the ostrich), shells and fish.
The condition of the skeletons found suggests that this varied diet contributed to overall good health.

Barbary sheep reintroduced in Beni Snassen

Since 2003, there has been a succession of excavation missions - Photo : E. Talbi

Also, the hunter-gatherer cooked his food, thus preserving the vitamins and facilitating mastication and digestion. Precise wood species were selected, as evidenced by traces of fire and the analysis of charcoal debris found in the Grotte des Pigeons: oak and cedar were preferred. A study of the collected plant remains show that the

The excavations in progress attract curiosity and support from learned societies - Photo : E. Talbi

«Man of Tafoughalt» also gathered wild cereals and different kinds of plants. The natural endemic flora of the Massif des Beni Snassen remains abundant and diverse still today. Of those recently listed, more than 50 have beneficial effects still known and documented today.

Some plant species with medicinal benefits endemic to the Beni Snassen

Common name	Medicinal use
Ampelodesmos	Intoxications
Arbutus unedo	Infections
Asparagus	Muscular pain, urinary difficulties
Asphodelus	Mumps, earaches (as drops)
Midland hawthorn	Fever and cough (sedative)
Heather	Infections and urinary difficulties
Calycotome	Jaundice
Carob tree	Constipation, intestinal toxins
Kermes Oak	Blood pressure, intestinal or stomach pain
Evergreen Oak	Fever
Cistus ladanifer	Diabetes and liver ailments
Cistus libanotis	Diabetes and intestinal pain
Sage-leaved rock-rose	Colic
Flax-leaved daphne	Hair loss
Broom	Intoxications
Globularia	Digestive and gallbladder disorders
Lavandula dentata	Cold and intestinal ailments
Lavandula stoechas	Cold and headaches
Oleander	Migrane (very toxic)
Mastic	Liver ailments and fever
White Horehound	Fever, migrane and pain
Common Mallow	Hair loss
Round-leafed mint	Digestive problems, bloating
Pennyroyal	Asthma and migrane (sedative)
Wild olive	Canker sores, toothaches, hair loss
Mediterranean dwarf palm	Hypoglycemia, lung ailments
Phillyrea	Jaundice
Rosemary	Infections, convulsions, urinary troubles

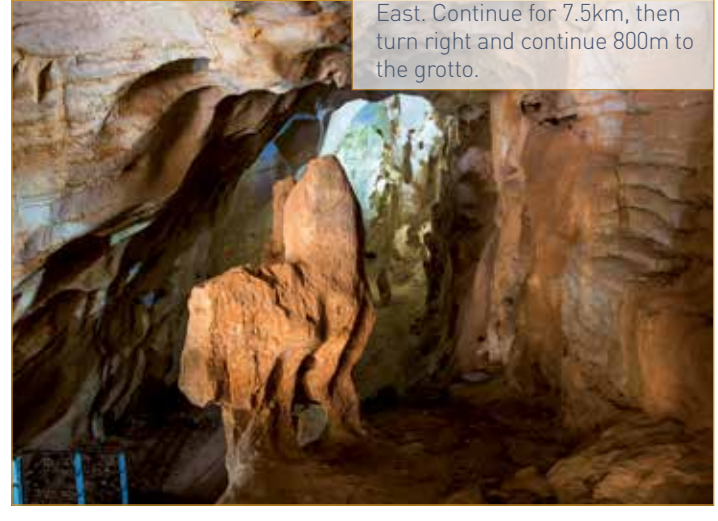
THE GROTTE DU CHAMEAU, OR WATER'S ENGINEERING

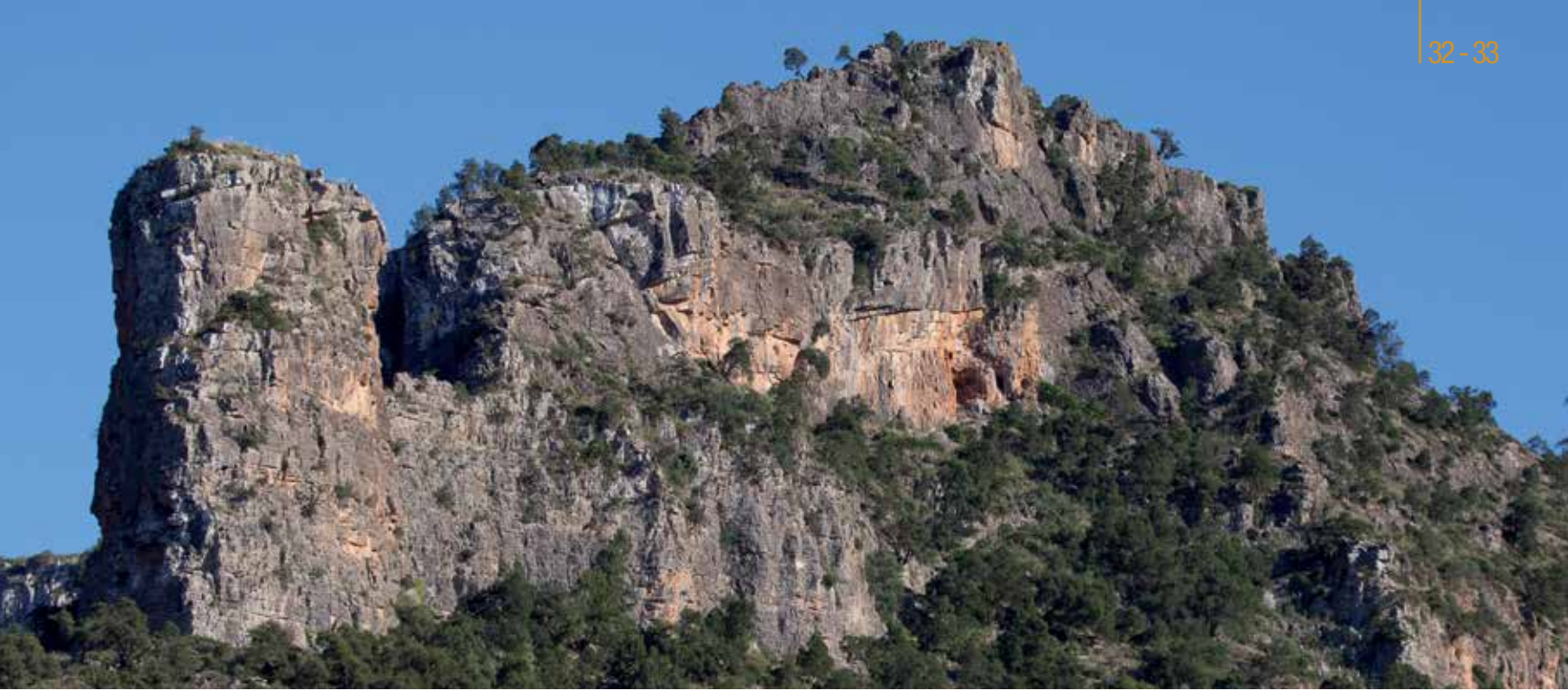
At times but a mere trickle, other times a raging torrent, water seems to travel through the heart of rock since the dawn of time. Immense cavities with ornate decorations, the grotto is enchanting. Recently equipped for the comfort and safety of visitors, the natural opus has always held speleological interest for enthusiasts. A highly recommended visit for lovers of natural scenery and magnificent minerals.

DIRECTIONS

> Departure from the center of Tafoughalt. Take the Berkane road northwards to the junction. Turn right towards Zegzel to the East. Continue for 7.5km, then turn right and continue 800m to the grotto.

An amazing journey, equipped, and with dimensions measured in tens of meters

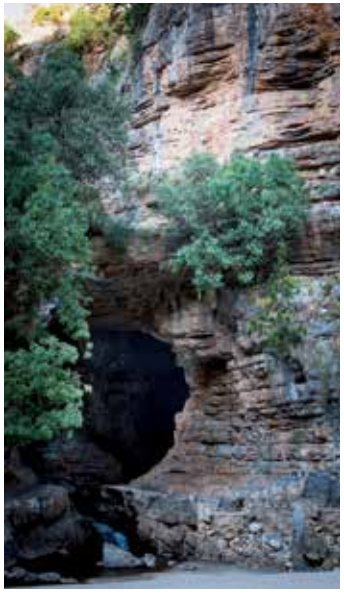




Under the camel

A step back enables one to observe these «involuntary» or «natural sculptures». Here, the observer becomes a creator and the exceptional setting lends itself to poetry. An actual camel point, but the contour of the mountain also evokes the shape of a camel (photo above). Below, water, abundant, impetuous, sometimes reduced to a simple stream, gouged 700m from a large gallery with a chaotic path, probably induced by the fracturing and relative softness of the layers. The space is comfortable to stand upright in. The path could not be any more random if it had been bored by a conductorless tunneling machine: water reveals its civil engineering and plastic poetry.

Lower exit of the Grotte du Chameau



Nature sophisticated its decor

Already, the environment one discovers at the bend in the access road is impressive.

We are in the valley of the Oued Ferrouj, tributary of the Oued Zegzel with its famous gorges; a setting of large cliffs, dominated by limestones and dolomites.

Equipped climb towards the upper entrance to the Grotte du Chameau

Mt. Atlas mastic tree (*Pistacia atlantica*) pushed almost horizontally at the grotto's exit

A quasi-circular opening appears gigantic; it opens 5m above the Oued, but it is only a glimpse, suggesting a Herculean work. Following the water's path is the logical way to discover the place. 25m along a steep pedestrian path is the upper entrance to the grotto, which opens onto a gallery of about fifty meters. Visitors then arrive in the upper part of a large well of about 30m in diameter and about 60m high. Simply amazing.

Incredible landscape, unbelievable decor

The great Jurassic formations also give a strong impression because plants have taken hold of it. This Mt. Atlas mastic tree, growing almost horizontally at the lower entrance to the Grotte du Chameau, the plants which punctuate the cliff everywhere, an incredible setting creates the place's magic.

The interior measures up and clinches the enchantment.

Exceptional sculpture

Concretions compete with forms and colours; cascades, rosettes, drapery, columns… every turn is dazzling, each step a pleasure. It is almost as if nature imitated what the artwork offers…

The forces that shaped this monumental setting seem to be extinct. However, they are still at work for those who know what to look for, despite calm appearances: the water picks up calcium and magnesium (dissolution) and deposits them farther along (precipitation); importantly, it partly removes them to the outside, widening the cavities.

Water as an engineer and architect

The dimensions are staggering, but Mother Nature has also placed some rest areas for visitors, two landings between the three well-spaced apart tiers. The first provides access to the second level galleries, where multiple concretions, including stalagmites and stalactites, set the stage for a majestic décor.
A vast gallery leads to a promontory, like a balcony overlooking the underground river.
Natural air conditioning keeps the temperature almost constant at around 26°C. Emblematic fauna of the region (blind fish, freshwater crabs, other cavernous species and a specific flora (algae, lichens, in particular) were also able to develop in these magical places.

For speleology or archaeology?

Only a few Neolithic objects have been discovered here. If older occupations took place, there is no doubt that the tumultuous waters have methodically eradicated any remains.
Today, the Grotte du Chameau is a masterpiece for speleology lovers or for the curious; archaeological science has enough to be satisfied with the wealth from other caves in the region.

A space in the form of a cathedral, carved by karstification

From cave to cave, a prehistoric life

To overpower such thick rocks with such gigantic passages, great quantities of water were required over a long time; much more than what flows today, even during the

Water shaped an exceptional underground karstic landscape

strongest (frequent) storms; much more than suggested by the various spouts that still today carry out the relentless work of water digging through limestone.
Paleolithic man was able to observe this. As such, the caves with a lot of water or water circulation were never really favourable to being used as living spaces for prehistoric human groups; perhaps they were considered dangerous given the violence, frequency, and abundance of floods, which can still be observed today.
No doubt it was much worse in the distant Paleolithic past. The geometry of the excavations suggests this, and the study of the concretions, which have «fossilized» some climate data, confirms it.

On the other hand, water has always attracted animals, for drinking or bathing; true moments of vulnerability in the wild. Prehistoric men probably knew how to exploit this and found here hunting grounds favourable for large game (horses, bovids, mountain sheep…), using neighbouring shelters (a small cave that became a sheepfold can be found close to the Grotte du Chameau) to cut apart, cook and perhaps eat the animals. These occasional visits, evidenced by various objects found there, show that these caves were once what public spaces are today: spaces dedicated for certain specific activities by early inhabitants, simply according to suitability to a given need.
For example, the Grotte du Chameau must have also had a specific purpose, though one perhaps less tangible at first glance: a supply of flint, an essential raw material to produce numerous Paleolithic tools and fire, still visible today as blackish nodules in the cave and its surroundings.
Things to eat, drink, work, make… a true prehistoric supermarket!

THE AÏN AGHBAL SHELTER NEAR AHFIR
FIRST HARVESTS IN THE PALEOLITHIC!

The discoveries made at this site illustrate the transition phase between the Paleolithic and the Neolithic. Tools for «harvesting» wild grasses suggest first steps of plant selection, harvesting to build up a supply, and thus the premises of cereal farming. This progress facilitated that of symbolic thought and other cultural aspects.

DIRECTIONS

> The Aïn Aghbal shelter is about 40 km north-northwest from Oujda along the Oued Aghbal in the Ahfir area.

The Aïn Aghbal shelter

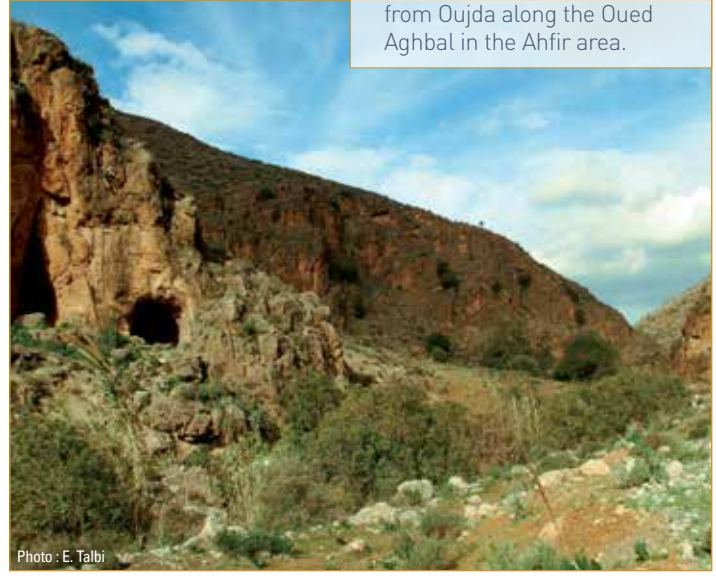
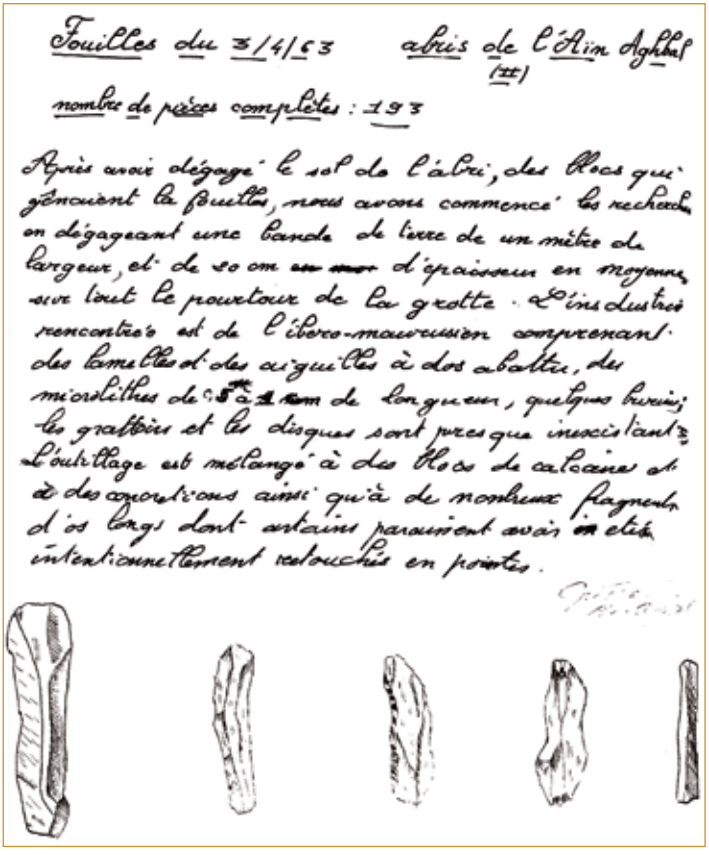


Photo : E. Talbi

The discovery of the site: a family story!

The Aïn Aghbal site was discovered in 1961 by L. Collina-Girard, an aid worker at the Regional Office for the Promotion of Agriculture in the Moulouya. He reported the discovery to Mrs. Samuel, correspondent in Oujda for G. Souville, was Director of Moroccan Antiquities at the time.

The excavation of the site was carried out in 1963 by Collina-Girard's son, who was only 14 years old at the time but passionate about archaeology!
This passion continued when, once his secondary studies completed in Berkane, Jacques Collina-Girard pursued higher education in Prehistory and Geology of the Quaternary until he obtained his Doctorate degree.


Fouilles du 3/4/63 abris de l'Ain Aghbal (II)

nombre de pièces complètes : 193

Après avoir dégagé le sol de l'abri, des blocs qui gênaient la fouille, nous avons commencé les recherches en dégageant une bande de terre de un mètre de largeur, et de 20 cm d'épaisseur en moyenne, sur tout le pourtour de la grotte. L'industrie rencontrée est de l'ibéro-maurusien comprenant des lamelles et des aiguilles à dos abattu, des microlithes de 0,5 à 1 cm de longueur, quelques burins, les grattoirs et les disques sont presque inexistants. L'outillage est mélangé à des blocs de calcaire et à des coquilles ainsi qu'à de nombreux fragments d'os longs dont certains paraissent avoir été intentionnellement retouchés en pointes.

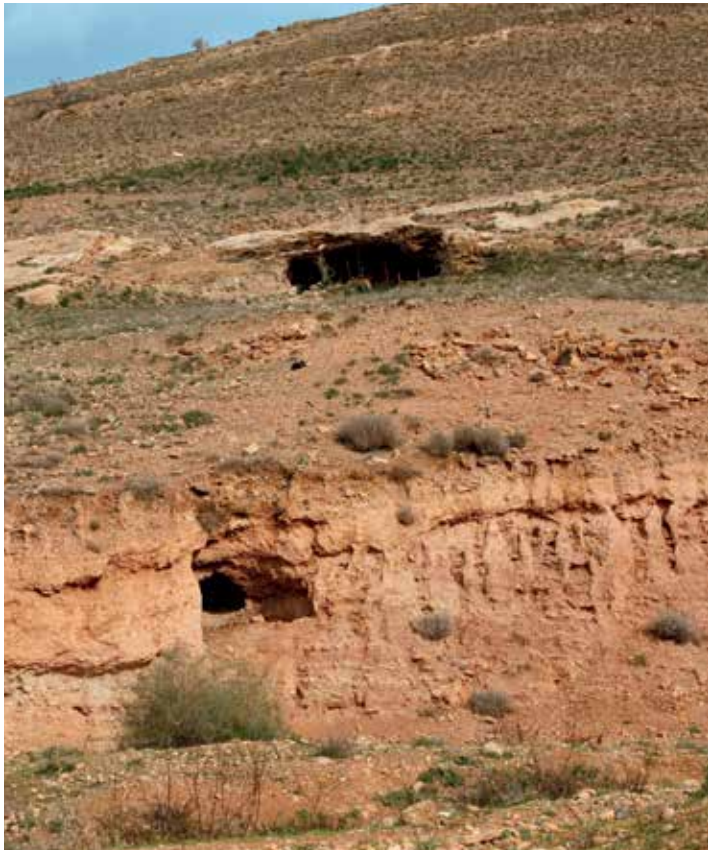
Excavation report by Jacques Collina - Girard, with drawings of a few pieces of lithic industry (1963)
Source : A. Bouzouggar

Archaeology owes him many studies and discoveries, down to the seabed of the Calanques of Marseille!

Hunter-gatherers at the Mediterranean gates

The Aïn Aghbal shelter is one of the rare deposits of the Iberomaurusian – era of Upper Paleolithic hunters who arrived in the Oriental around 22,000 years ago – located near the Mediterranean coast.
In fact, it was wrongly believed that Iberomaurusian avoided occupying coastal sites whereas similarities with its contemporaries, the Magdalenians (of the Madeleine site in France) recently discovered in Valencia in Spain, would seem to prove that there was contact between both sides of the Mediterranean several thousand years ago. Once again, the northern Oriental must be considered as a place where exchanges took place as well as a mixing of cultures from both continents, African and European.
The fauna hunted by the Iberomaurusians of Aïn Aghbal did not include the Barbary sheep, which is surprising since this caprine was very popular at the time. Game was essentially comprised of gazelles and bovids.
The shelter was also used by predators when humans moved to other areas, as evidenced by the presence of bone remains such as panthers, wild cats or lions.

The first shelter dug in Miocene sandstones and conglomerates on the access road to Ain Aghbal - Photo : E. Talbi



The detrital formations (sandstones and conglomerates) of the Miocene contain several caves and shelters
Photo : E. Talbi

The diet of Iberomaurusian groups, with its high meat content, was supplemented by gathering land pulmonates, such as snails which are abundant at the site.

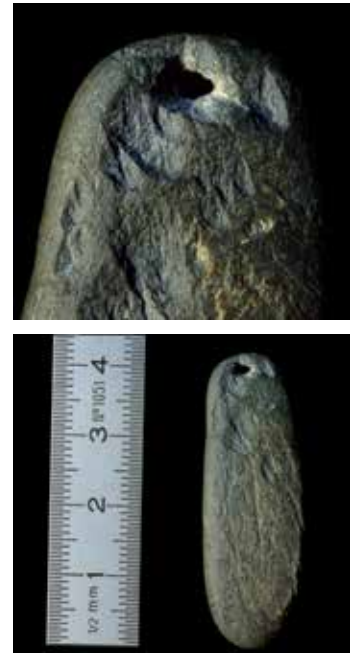
Hunting and harvesting armor?

Archaeological excavations in the Aïn Aghbal shelter have uncovered a very rich stone tool in the form of flint slabs, the lengths of which do not exceed 3 cm and the width 1 cm.
While some of these very sharp pieces were probably used as hunting armor once attached to javelins or arrows, other curved ones, called «half moons» by archaeologists, - were aligned side by side on other supports to serve as tools for harvesting wild grass sickles!

The Aïn Aghbal shelter provides, along with other aides in Morocco and elsewhere, proof that the Neolithic «revolution» did not take place 7,000 years ago with the adoption of a sedentary lifestyle, domestication of animals and agriculture. Instead, it finds its roots in the Upper Paleolithic, when groups of humans had already found ways of harvesting wild plants, thus genetically modifying them, which lead straight to the domestication of plants or cereal farming!

Pendeloques and symbolic objects: a link to speech!

The Aïn Aghbal shelter is among the rare sites that have yielded so-called symbolic objects, such as a fragment of ocher stone, a polished convex flat rod figure and especially a shale pendeloque.
Microscope observations have shown that the surface of this pendeloque has a diamond shape on its large diagonal and a «plaited» motif.
These motifs remain a mystery, particularly since this type of «adornment» is widespread among the Iberomaurusian groups of Morocco but also all the way to western Algeria!
More than simply an ornamental object for appearances, adornment seems to suggest lings between groups, a sign of belonging to an «ethnic group», the meaning and symbolic significance of which can only be transmitted through language, a sort of passage *from adornment to speech*!

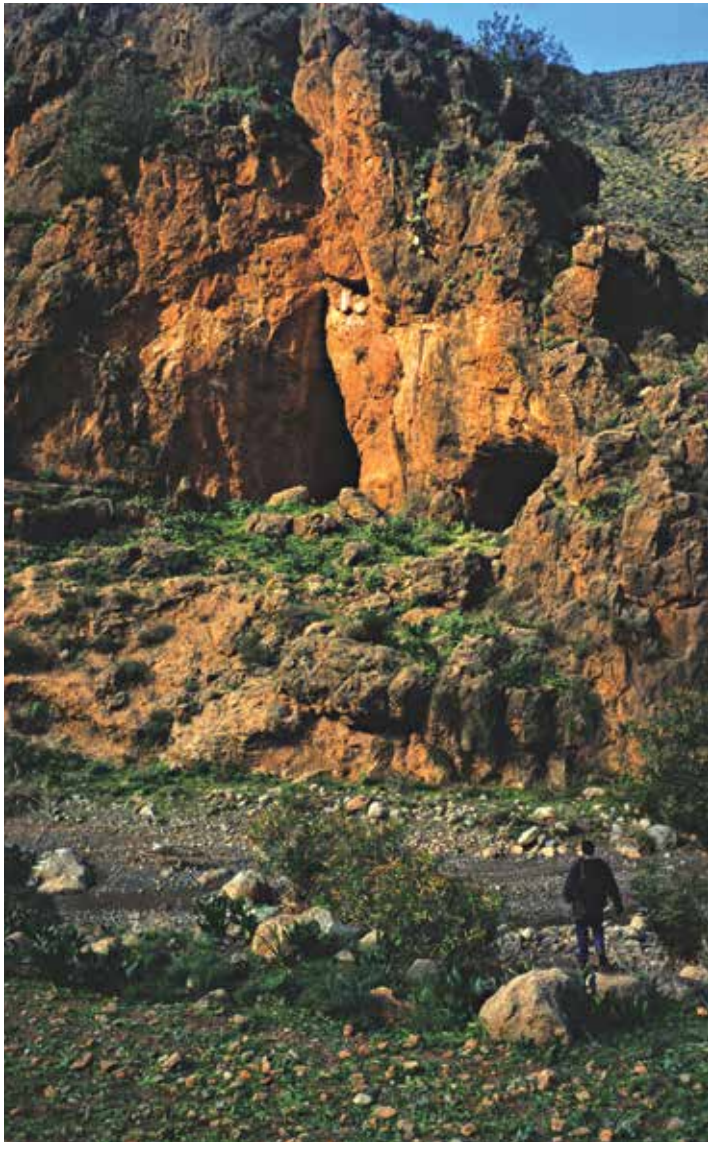


Shale pendeloque - Photo : J. Collina-Girard

The Aterians also get involved!

Oriental Morocco is the quintessential Aterian space for at least 170,000 years!
The Aïn Aghbal shelter is a small cavity; yet the Aterians did in fact occupy it as evidenced by a few stone tools that are typical of their time period.
They probably used the site as a hunting lodge or workshop for making tools before setting

out to conquer the Beni Snassen Massif which has many larger caves, like the Grotte des Pigeons in Tafoughalt !



Aïn Aghbal cave dug into the dolomitic limestones of the Jurrasic - Photo : J. Collina-Girard (2000)

THE AÏN SFA WATER CAVE

A LIFE SOURCE FOR A VAST TERRITORY

The village of Aïn Sfa (or «source of purity») bears the name of the source located almost in its center. The source appears at the back of a cave of the same name where it flows as a calm body of water.
The grotto has no archaeological or speleological value, but offers pleasant freshness and the possibility of drinking mineral-rich water, perfectly clear and pleasant tasting.

DIRECTIONS

> 30km northwest from Oujda. The cave, accessible via Beni Drara or by the Sidi Bouhria road, is located in the valley of Oued Sefrou, north of the center of Aïn Sfa.

Lush velley of theOued Sefrou. At back, up high: Ras Foughal and the Zenati Khlifa cliff

A body of water, deceptively calm for most of the year, but a few dozen meters from the entrance - Photo : Y. Fizazi

Beyond appearances

Also known as Al Kaf, particularly in the surrounding areas, the grotto is easily accessible and marks this site considered as one of the entrance points to the Beni Snassen massif.
Groundwater circulation, which can be glimpsed here, is one of the main characteristics of this massif. This is quite astonishing, as one really needs an overall view of the water resources in order to fully appreciate the formidable network and abundant reserves hidden underground.
What may escape the ordinary visitor is that beyond the few dozen meters on dry land, there is a natural channel dug by the water itself along nearly 1.5km that drains groundwater and collects enough to create a kind of subterranean lake, mostly calm (especially in the summer) and offering contagious serenity.
This is not the case during heavy rains, though any flooding does not endanger the safety of the inhabitants.

Source of life… and myth?

The available water is thus the cause of the verdant nature of the vast plain downstream and the abundance of varied farming crops developed by inhabitants.
Some claim that the water system of the Aïn Sfa cave is but one of the outcomes of a network connected to the Grotte du Chameau (?). This has yet to be verified.

THE TIFFERT SITE
THE OUTDOOR PALEOLITHIC

Stratified outdoor sites are scarce and today often undetectable. Unlike caves and other anfractuosities, these sites are directly exposed to weather and other changes in the environment since the Paleolithic. What nature has not cleared away, humans with their livestock and agriculture have. It is therefore always a bit of a miracle to find evidence of prehistoric man and an even greater miracle to be able to situate it in the lifestyle of such distant ancestors.

DIRECTIONS

> Departure from Tafoughalt northeast towards Berkane. The site is located west of Berkane.

View of the Kebdana Mountains towards the North from Tiffert

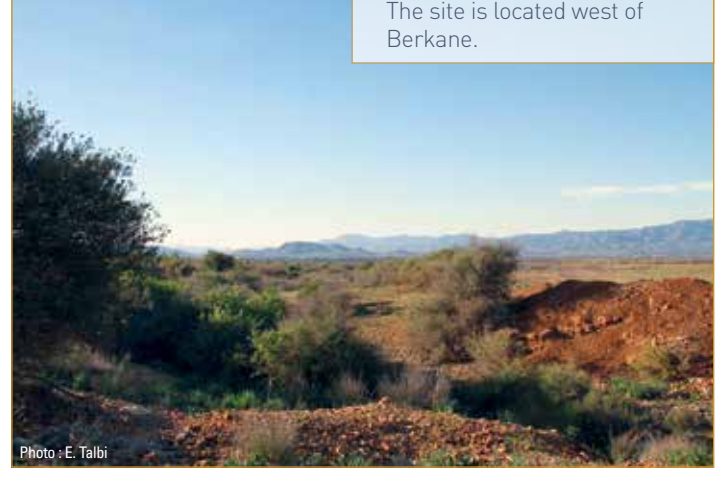


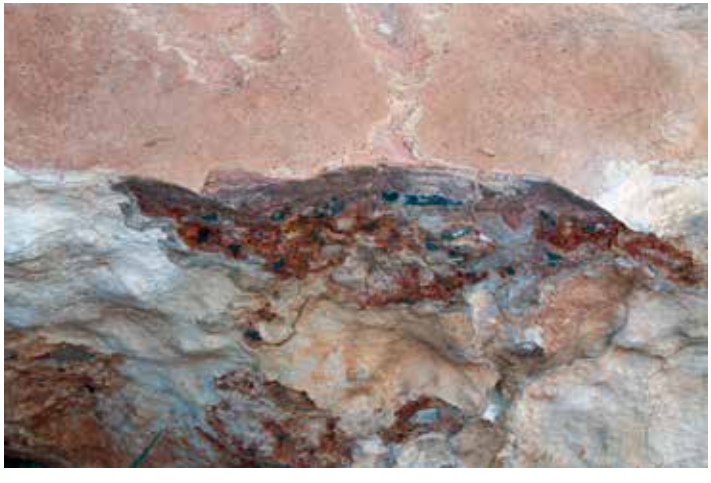
Photo : E. Talbi

Evidence of major climate change

The Tiffert site – in fact, a group of surface sites – prove that the humans of Beni Snassen did not only occupy caves, but also settled in open outdoor sites. There are multiple reasons for their presence here, around 15km from the Grotte des Pigeons.
The first reason is that the site is located in an area of calcareous crusts, which means that Paleolithic groups occupied it during dry or semi-arid times. Indeed, these geological formations could only be shaped with a rainfall of less than 500mm per year and an average annual temperature of not more than 20°C, in other words about a hundred dry days.
In such a climate, caves are no longer the preferred habitat for prehistoric man: the nomadic lifestyle is an excellent way to deal with the scarcity of game and other food resources by searching for more favourable spaces.
The second probable reason for the presence of humans on this site is the abundance of flint, an effective and sought-after raw material during the Paleolithic, used for the manufacturing of stone tools and weapons.
Lastly, the site was also occupied because it had watering points, the evaporation of which created the calcareous crusts.

Pebbles, including flint, trapped in the calcareous crust
Photo : E. Talbi

Limsetone crusts on the Tiffert site- Photo : E. Talbi



Global warming refugees… 60,000 years ago!

The archaeological objects discovered serve to date the site's occupation at the Aterian period, well known in Oriental Morocco's caves. Without dating methods involving nuclear physics, the site's geology could provide insights into Tiffert's chronology.
As such, the arid and semi-arid climate evidenced by the crusts can only refer to two periods of major climatic crises during the Aterian period.

Pedunculate discovered
at the Tiffert site

The first, 25,000 years ago, and the second around 60,000 years ago. The stone tools discovered on site have many peduncled parts, most of which are arrowheads, which precludes the first period, as this type of Palaeolithic tooling was totally absent during that time.

Layout of calcareious crusts at the Tiffert site - Photo : E. Talbi

THE ORIENTAL RIF

Tiffert landscape: view to the South towards Beni Snassen - Photo : E. Talbi

Then there is the climate crisis of 60,000 years ago: a great drought that affected the entire African continent. Rainfall reached its lowest levels with numerous consequences: dried-up rivers, sparse vegetation, fauna that was both rare and very exposed to predators, poorly supplied groundwater.
Oriental Morocco – particularly its mountainous massifs – became very attractive for human groups and animals, because high altitude has the beneficial effect of somewhat limiting the effects of drought: the area therefore offered more favourable conditions than in lower altitudes.
The site was discovered in the 1960s and explored again at the beginning of this century. It yielded a very rich collection of pedunculated pieces, many of which were used as arrowheads.

Tools adapted for hunting from a distance!

The Aterians made weapons attached to javelin or arrow-type supports, which could be thrown at targets from a distance!
This was a dramatic change for hunting during the Paleolithic because humans no longer needed direct contact with game in order to hunt.
Other objects, known as «scrapers», used to work the skins of the hunted animals, were found on site.
Tiffert was therefore a site that was mainly dedicated to the manufacture of hunting implements and tools and partly devoted to the processing of large game carcasses.

Photo : Y. Fizazi

One of the coastal landscapes of the eastern Rif: the marly lands at the mouth of the Oued Amekrâne north of Temsaman

The Rif, an arch-shaped chain of mountains with a complex geological structure (including limestone, sandstone and tertiary marls) plunges towards the Mediterranean as occasionally abrupt cliffs. To the South and East, the chain descends into fertile hills towards two river basins: Oued Amekrâne, Oued Kert, the Moulouya river. These layouts were always favourable to human habitat and mobility. A few impressive limestone massifs do not change the perception of a landscape made mainly of rounded hills, dominated by clay and shale.

Streams, folds and other breaks in the mountains offer both strategically placed sites with unobstructed views and natural roadways.

Varying altitudes, contrasting climatic conditions between neighboring territories, and equally varied sunshine have generated ecosystems and an abundance of wildlife and vegetation species that have proven very conducive to life since the early Palaeolithic.

THE IFRI N'AMMAR CAVE

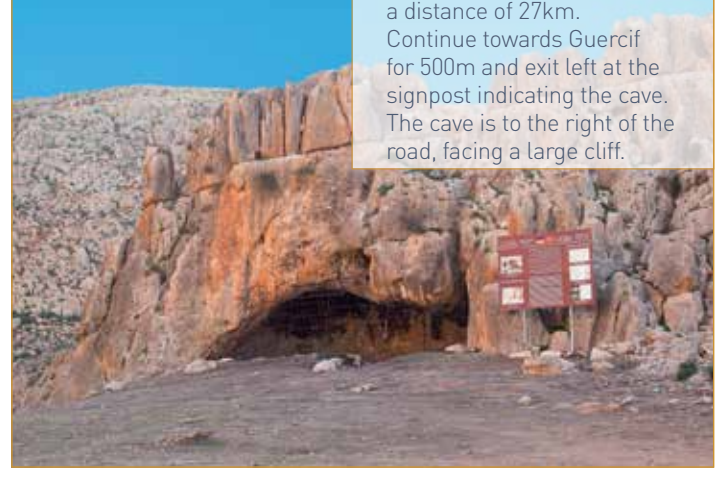
EVIDENCE OF A DENSELY POPULATED RIF FROM PREHISTORICAL TIMES

Located on one of the Rif's buttress formations, 45km as the crow flies from Nador, on the edge of the Moulouya plain, the Ifri n'Ammar cave site offers a clear view for those who take shelter there. The presence of human groups from the Middle Palaeolithic period was uncovered in the early 2000s. Lithic tools, remains of wild animals and perforated shells (probably for ornamental purposes) suggest that the site is one of the oldest among Aterian human settlements in North Africa.

DIRECTIONS

> Leave the down of Al Aroui via the Driouch road. After 7km, turn left and follow the road to the center of Afso, a distance of 27km. Continue towards Guercif for 500m and exit left at the signpost indicating the cave. The cave is to the right of the road, facing a large cliff.

In this visually unassuming anfractuosity, excavated material of up to 7m in depth was dug up, taking archaeologists back almost 200,000 years



Through millennia and civilizations

Homo Erectus was present in this part of the eastern Rif, as evidenced by traces of technical activities found especially near the banks of the Oued Kert. Bifaces and cleavers of the Acheulean age bear witness to the passage of hunting groups in the Lower Palaeolithic, undoubtedly more than 350,000 years ago.

According to the shape of these lithic tools, the methods by which they were produced, and also according to modern technological dating techniques, Aterian inhabitant were responsible for the lower part of the filling (about 4m of the total 7m of depth) 70,000 to 173,000 years ago.
This makes the Ifri n'Ammar cave the oldest known Aterian habitat in North Africa.

Overal view of the
Ifri n'Ammar cave site

Photo : Mikdad, Eiwanger & al. 2000

The Middle Palaeolithic marks the beginning of the Aterian period and the oldest remains from the Ifri n'Ammar site date back to that time. At times abandoned, (as shown by the superimposed calcareous crusts in the cleared layers), the shelter was first occupied by Aterians, followed by Iberomaurusians. This appears to have been the case for almost all the caves in the region, which seems to have been densely populated. Lithic objects found at the site prove this, such as those made of bone, or adornment objects made of shells from marine and land creatures.

A large number of vestiges, produced over a long period of time

Excavations have uncovered a significant Aterian lithic industry, leaving behind many peduncled tools, mostly made of flint (but also of chalcedony or occasionally quartzite): scrapers, graters, points, blades, chips, etc.
These were used for multiple tasks: scraping, grating, perforating, etc.
The oldest of these tools date back 145,000 years before our time.

Chronology of tools, from Aterians (bottom) to Iberomaurusians (top)
Arrangement : Nami, Möser, 2010

Found in Aterian level layers, this Nassarius Gibbosulus shell, pierced so it could be suspended is a vestige that dates back about 80 000 years

Source : Eiwanger, Mikdad, Möser, 2010

This dating, previously thought to be more recent, takes the appearance of the Aterian lithic industry in North Africa farther back in time. The Ifri n'Ammar cave is therefore key to understanding the development of the first «modern man» – at least in terms of anatomy and behavior – often called Archaic *Homo Sapiens*.

• The hunter's diet

Many wild animal bones are also present, which, being abundant at the time, constituted a source of food for Aterian hunter-gatherers: beef, bubals, mountain sheep, gazelles, horses, cats …

Various skeletons of birds and small animals indicate a diversified diet (though for ostrich, only the eggs are present); tortoise and toad complete this bestiary.

Added to these are the bones of predators having occupied the cave after it was abandoned by humans.

• Culture and aesthetics

As in the Grotte des Pigeons of Tafoughalt, Nassarius shells (marine gastropods) were found, perforated in order to be strung, confirming aesthetic and /or symbolic aspirations of the time.

These pieces have worn down facets, suggesting that they were worn, and traces of red ochre are evidence of the occupants' modern … 80,000 years ago!

The Upper Palaeolithic

With the Iberomaurusians, the cave became an escargotière, a snail shell deposit, which produced this ash filling containing terrestrial mollusk shells as well as charcoal debris dotted with heated stones; in other words, traces of deliberate fireplaces responding to the need to cook food, light the cave and keep animals away.

Parietal painting on a wall of the cave: the oldest artistic expression in North Africa
Photo : INSAP(Maroc) / KAVA (Allemagne)

Iberomaurisian lithic tools are essentially made up of blades and slats, but also scrapers, chisels, etc.

The cutting and working of animal skins seems to have been one of the main preoccupations. The remains discovered also indicate a rich bone industry.

Exceptional discoveries

The discovery of a parietal painting on the left sidewall of the shelter is astonishing: it may well be the oldest artistic creation of its kind in North Africa.

Five burials were found just below this artwork: four belonging to young children, buried in bent positions, placed in carefully prepared pits. The fifth is that of an adult male buried in a sitting position.

Archaeological excavations

The cave has been excavated for the past twenty years (1997) by a team of Moroccan INSAP researchers, in cooperation with German researchers.

Iberomaurusian adult male buried in a sitting position in a pit dug in the older mounds

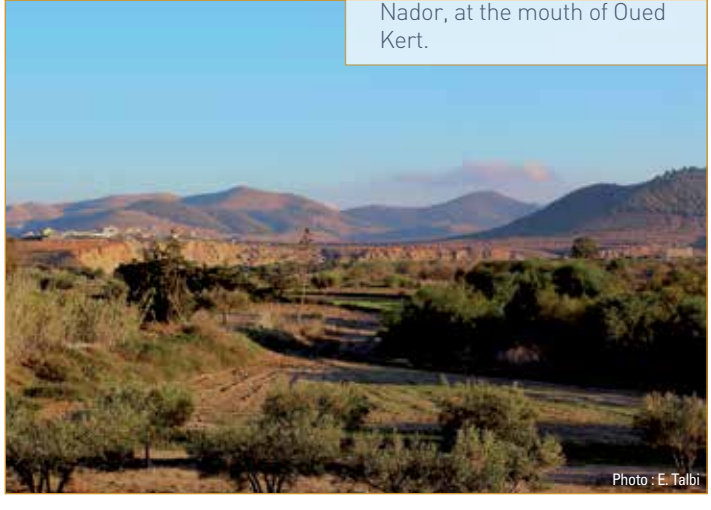
Photo : INSAP (Maroc) / KAVA (Allemagne)

THE OUED KERT SITE

LIFE AT THE WATER'S EDGE SINCE ACHEULEAN TIMES

A waterway attracts game.
As long as there are select materials such as flint available nearby, a site can be said to offer many advantages for Palaeolithic Man. If a favourable climate prevailed in the time period under study, it is almost certain that human settlements existed, with a more or less permanent workshop, outdoor food storage and sometimes areas for various collections.

Oued Kert
in its environment



DIRECTIONS

> The site is almost 8km from the Mediterranean, West of Nador, at the mouth of Oued Kert.

A fairly verdant landscape, where the oaks and cedars have virtually disappeared in favour of vegetation better adapted to an arid climate - Photo : E. Talbi

Homo Erectus at the gates of the Oriental region… at least 500,000 years ago!

The banks of Oued Kert are replete with archaeological sites of different ages, from the most ancient handaxe cultures of the Acheulean to Protohistory of the Metal Ages.
A chronology such as this one attests to the ancient presence of humans in this part of Morocco and, more importantly, to its continuity for thousands of years!
Several stone tools (mostly handaxes) were discovered in a place called Ammorene.
The manner in which these tools were made situates their age between 500 and 350,000 years old. This would confirm that the arrival of *Homo Erectus* (the man who Stands on his feet) was quite late in this region, and the presence of its more archaic branch, Homo Ergaster, was limited to certain parts of the Oriental: more specifically, the hinterland of Saïdia and Aïn-Bni-Mathar.
The Oued Kert site is important because the archaeological discoveries made there testify to the great adaptability of humans in this region; this is evidenced by the selection of good quality raw material (flint) for the making of their tools and their settlement near a water source which both attracted large flocks and supplied freshwater.
It is also interesting to note that among the stone tools found here, there are special pieces called «cleavers», tools with sharp, transverse distal parts that are intriguingly similar to our current cleavers. This tool was probably used to break up large bones in

In this naturally undulating landscape, Oued Kert dug its bed and deposited its alluvium - Photo : E. Talbi

order to extract the marrow, a very nutritious substance for Palaeolithic humans.
Even more fascinating is the fact that this cleaver, a very common tool in the older Palaeolithic phrases in Africa, was also found in Europe, however only in southern Spain!
The theory of ancient exchanges between human groups from either side of the Mediterranean is thus supported by the discoveries at Oued Kert!

In the land of the last hunter-gatherers of Oriental Morocco!

A little further south, about 20km from the mouth of Oued Kert, several sites have been identified, dating back to the end of the Palaeolithic. On the right shore of the Oued, around 500m from the bridge of the Mediterranean bypass, between Nador and Kebdani, pollen remains were found and studied.
This indicates that, around 12,000 years ago, herbaceous plans grew in the vicinity of the site, cyperals and grasses, evidence of a humid climate and an abundance of freshwater.
There were also many trees, including cedar and oak, species that were certainly more common in the mountain ranges of the region.
These plant species suggest that the site had favourable climatic conditions for the last groups of hunters in the area, who gradually adopted a more sedentary lifestyle, abandoning hunting and gathering in favour of agriculture and animal husbandry.

JBELGOUROUGOU SITES

MULTIPLE RESOURCES AT THE FOOT OF THE EXTINCT VOLCANO

Jbel Gourougou was a volcano with violent eruptions, at a time shortly before the climatic conditions became favourable to the presence of humans. The product of volcanic activity largely contributed to constituting an environment with rich and diversified fauna and flora, around abundant and perennial water sources, easily accessible raw materials appropriate for making lithic tools, as well as fertile soils.

DIRECTIONS

> Jbel Gourougou is a stratovolcano overlooking the city of Nador. Several approaches are possible from Nador, Bni-Ansar or Zeghanghane.

Tazouda plateau on the southwest side of Gourougou; an environment that has remained verdant and rich in lithic materials

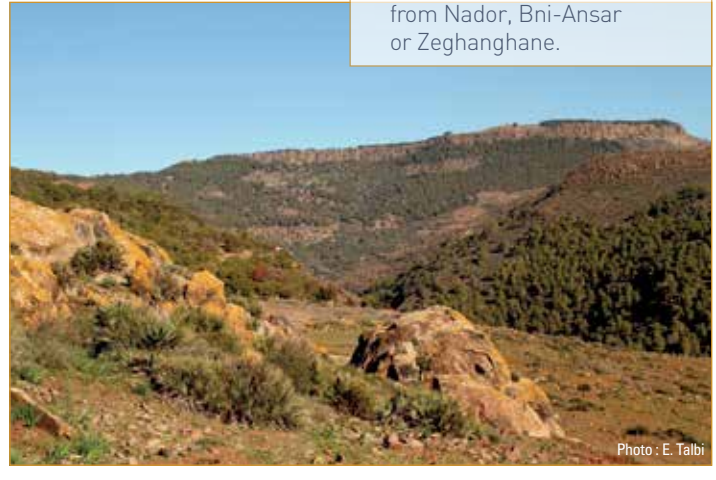


Photo : E. Talbi

Palaeolithic sites discovered… by a philologist!

Carlos Posac Mon was essentially trained in philology and it was his meeting with prehistorian Julio Martinez Santa-Olalla that first introduced him to archaeology. He began traveling the Nador area to discover several sites lined to different prehistorical periods.
Posac Mon was very interested in Jbel Gourougou because this area has always offered all the conditions favourable to human settlement, from the Palaeolithic to the Neolithic. Its proximity to the Mediterranean Sea and Lake Marchicha – main sources of marine products for one, and terretrial products on the other hand, as well as the availability of lithic raw materials make the Gourougou a key area for *Homo Sapiens*.

Jbel Gourougou « *…brings back the fire of the ancient volcano, thought to be too old*»!

Gougourou is a volcano that has erupted several times. The first eruptions, during the Neogene, were initially underwater, later eruptions were in open air.
The last eruptions, in the early Quaternary, were contemporaneous with the oldest human activities in the Oriental.
The lava flows would have discouraged even the most audacious of the *Homo Erectus* from settling near the Gourougou because their effects were devastating not only for man but for the fauna and flora as well.
On the other hand, once the volcano extinguished, the lava cooled, the ash fallout stopped and the suffocating fumes disappeared into the atmosphere, the Gourougou once again became an area offering all the necessary conditions for the development of human activity. Archaeological and hydrological data support this conclusion.
In fact, beginning in the middle Quaternary, Palaeolithic groups gradually populated the Gourougou and its surroundings, water was plentiful due to the sources coming from a rich groundwater reserve, regularly replenished by water infiltrations.
Volcanic eruptions had caused lava to rise from the earth's core, which, when cooled, created volcanic rocks (basalts and andesites) with cracks and pores allowing for the storage of water. The water was restored in springs where volcanic flows meet underlying watertight volcanic-sedimentary rocks. The basaltic rock cliffs thus play the same role as limestone cliffs.

The Tighanimine valley, reported among the archaeological sites of the Gourougou - Photo: E. Talbi

The Aterian: between sea and mountains

Jbel Gourougou recorded the passage of Aterians. Indeed, several places, such Tighanimine, Tazouda, Haddu and Sidi Messaoud yielded archaeological finds dating back to this period and included pedunculated pieces or other tools such as those archaeologists call «graters» or «scrapers».
Stone tools such as these – particularly some pedunculated pieces – were used as projectiles for hunting. In other words, they were thrown at game from a distance. This use in Gourougou, which was undoubtedly more wooded in the days of the Aterians, proves that this type of hunting technique was not limited to open savannah landscapes.
Indeed, in sparsely wooded areas, approaching an animal was never an easy task, as the surprise effect was never guaranteed unless bows or javelins were used, increasing Palaeolithic hunters' chances of success.
Proximity to the Mediterranean coast undoubtedly provided Aterian groups with other food sources in the form of mollusks, mainly mussels and limpets.
The Mediterranean thus became an alternative source of food when there were little or no resources on land.
Indeed, this area experienced climate crises during the Palaeolithic period corresponding to droughts that considerably affected vegetation due to scarce, irregular precipitation; river flows lessened and wildlife, like humans, had to find places offering more favourable conditions.
Aterian groups, who had neither mastered agriculture nor domesticated animals, had no other choice but to head for the coast.

Kerker: connecting East and West

It was long believed that the Iberomaurusians, these Upper Palaeolithic groups that populated the Oriental more than 20,000 years ago, had not inhabited the coast.

This idea is challenged at the Jbel Gourougou sites and especially the locality of Kerker, as several archaeological finds dating back to this period were uncovered there, including stone tools in the form of blades, objects with sharp edges, very effective for cutting or used side by side on a bone or wooden support as a sickle to mow wild grasses.
In 1951, Carlos Posac Mon, a pioneering prehistorian of Oriental Morocco, published his belief that Kerker was a point of passage for Upper Paleolithic hunters from West Algeria towards the Atlantic coast, where their presence is recorded at sites in the Temara region.

This is in fact not the case, as new research in Oriental Morocco – specifically the growing number of radiocarbon dating operations – have clearly demonstrated that the last Palaeolithic hunters moved from West to East!
Jbel Gourougou also offered Aterian and Iberomausian hunters shelter from dangers and the possibility of keeping an eye on herbivores that visited the Marchicha lagoon (these constituted the main part of their diet).
It also offered a chance to contemplate the striking view atop this mountain, as the many tourists who visit this region still do today.

Volcanic flow, which gave the Tazouda plateau its multiple cracks, enabling water infiltration which feeds the sites many sources - Photo : E. Talbi

THE IFRI EL BAROUD CAVE

A TECHNICAL COMPLEX BASED ON THE CARVING OF FLINT

The Ifri El Baroud cave, in the eastern part of the Rif, about 60km as the crow flies from Nador, has many points in common with the Ifri n'Ammar cave. This site played host to an industrious Iberomaurusian presence and served as a habitat almost until hunter-gatherers began to adopt a sedentary lifestyle. Occupation gradually ceased with the advent of the Neolithic era, agriculture and animal husbandry replacing predation of natural resources.

DIRECTIONS

> From the center of Afsou, take the Guercif road for 10km, then exit right towards the cave which is in a cliff in Jbel Ech Chaboun

Reduced access, easy to defend for this prehistoric Palaeolithic perch

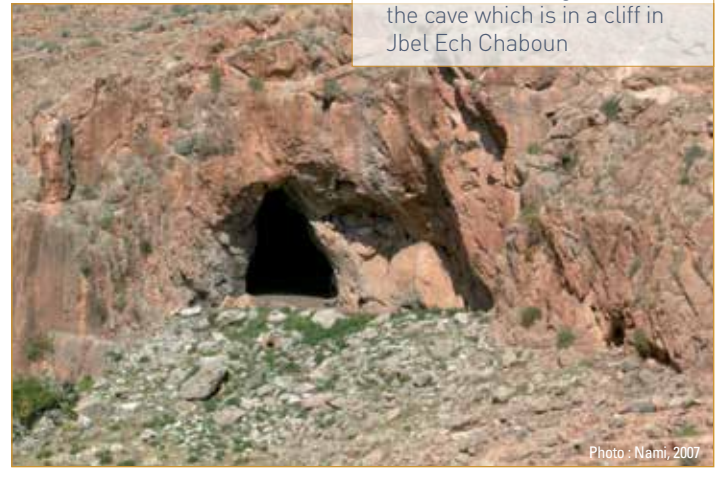


Photo : Nami, 2007

The entrance to the Ifri El Baroud cave in its immediate surroundings
(INSAP (Morocco) / KAVA (Germany)

A stronghold position

The cliff, leaning against a mountain range, overlooks the valley of Ayarouaou, which can be accessed by two passes: Hassi Ouenzga to the south, and Regada to the North. The cave opens widely towards the East and offers a wide, commanding view over a vast environment.
During the remote times which are of particular interest here, we know that the favourable climate and the dense vegetation (now vanished) had resulted in a rich fauna and, consequently, had favoured human settlement. Here, like at many other sites of the same region which were occupied at the same time, the nature and diversity of uncovered faunal remains constitute proof.

Entrance to the Ifri El Baroud cave and its broad access slopes made of blocks fallen from the cliffs and waterworn materials

Photo : INSAP (Morocco) / KAVA (Germany)

The current slope, at the cave's entrance, as seen from its steeper slope

A habitat, a workshop

The cave is large enough to have accommodated several activities: a gallery of 10 to 12m at its widest and about 30m depth. Open to the southeast, it is accessible via a rather steep slope, almost 50m overlooking the valley where shards of Neolithic ceramics are scattered, as well as carved flint artifacts.

Human activities, as well as rain and runoff (the entrance is open to the sky) have «washed out» the entrance to the cave and undoubtedly swept away any Neolithic remains: any found inside are towards the back of the cave.

Under the usual midden, an examination of the deeper layers (the filling often reaches 3m) using 4 drill holes of about 30 square meters in all, revealed thousands of lithic objects, almost all of which were made of flint. About half are flakes: about a forth are slivers. About 10% to 15% of the objects would have been turned into tools. The quality of the workmanship is at times remarkable: in some cases, carving produced blades less than 25mm tall and 10mm wide.
Over an average of 2m, the filling is an escargotière (common to the caves of Iberomaurusian occupation) where earth is mixed with a multitude of shells, whole or crushed, with a few pits of burnt stones surrounding beads of ash and much charcoal debris. These layers contain many animal bones and lithic objects.
Obviously, the large number (and especially the great proportion) of fragments suggests that carving work (cutting and shaping) took place mostly inside the cave.

Abundant fauna

The animal remains uncovered by successive excavations are evidence of a fauna rich in mammals throughout the occupation: including fauna which has now become

Sometimes sophisticated carving for small, thin tools - Photo : INSAP (Morocco) / KAVA (Germany)

extinct, including alcelaphinae (bubal hartebeest, antelope) and bovidae (auroch), as well as remaining or recently disappeared fauna (hare, crested porcupine, Barbary sheep, Atlas lion, etc.) and a few undetermined species.
This data on wildlife – combined with data on microfauna, climate, geomorphology, etc. – allow researchers to get an idea of the palaeo-environment of the site.
Everything seems to point to an improvement of environmental conditions for the last 10,000 years. This favoured significant human settlement from the end of the Palaeolithic onwards.
The study of fauna, especially the appearance of mammals that are now extinct, is very important in order to understand climate changes and their impact, as well as population dynamics.
These site data have thus fueled the debate concerning the passage of prehistoric man from North Africa to the south of the European continent via the Gibraltar Strait.

Flint, far from identified quarries

About 20km from the cave, near the village of Aïn Zohra, a hill is strewn with flint shards and fragments of various shapes. Below, pendunculated tools from the Palaeolithic tools can still be found.

Section of a dig undertaken in 1996; the grey is the considerable thickness of the escargotière and the lower limestone layers in brown - Photo : INSAP (Morocco) / KAVA (Germany)

Clearly, the site served as a workshop as well as a quarry for nearby human settlements (Ifri El Baroud, but also Ifri n'Ammar in particular). Here, raw materials were collected, whether they were removed from the site or not, as only a semi-finished, or already tested product would be taken to be refined in the cave.
It would seem that these arrangements are relevant to all Iberomaurusian periods, including the Middle Palaeolithic period, as the same basic materials are found in all the excavated layers of the cave.
Only the light brown flint seems to be of a different origin; its probable deposit was identified nearly 36km from Ifri El Baroud, along the cliff and in the bed of the Oued Moulouya. It comes in large pebbles of

Polished antelope bone with engraved decoration, found in the cave rubble

Photo : Mikdad, Eiwanger & al. 2000

Perforated mollusk shells, to be assembled as a necklace or other suspended mounting
Photo : INSAP (Morocco) / KAVA (Germany)

remarkable quality (rare anomalies, unlike the flint of Aïn Zohra), which undoubtedly made the long walk worth it.
A «stock» of these pebbles – probably reserved for special tools – was found under the escargotière: perhaps evidence of a good resource manager's caution? A few rare objects made of red flint, were made of materials from a deposit found downstream of Oued Kert.

Artistic and/or symbolic expressions

A survey carried out in 1996 once again yielded numerous lithic and faunal objects, as well as evidence of a very active bone industry: turritella (or fossil agate) and perforated shells, awls, a polished and engraved antelope bone (photo on previous page) and needles.

8 millennia and a single burial

Given the relative homogeneity of the layers, the gradual evolution towards small tools, as well as the production methods and nature of these tools, it can be estimated that the cave was occupied throughout all Iberomaurisian periods in a relatively continuous manner.
The single burial (a woman buried in a well-laid pit in a bent position like in the Ifri n'Ammar cave) and the few rare human remains show that the lifestyle was not identical to the one in Tafoughalt, for example, with its necropolis of more than 200 bodies.
Various datings suggest that occupation began more than 18,000 years ago, ending less than 8,000 years ago, coinciding with the spread of the Neolithic era in the northern Maghreb region.

Today, the approach to the site alternates between fertile lands and impressive limestone massifs - Photo : Y. Fizazi

Archaeological excavations

The excavations began in 1995 as part of the framework forcooperation between Morocco (INSAP researchers) and Germany.

A gently sloping access to the plain - Photo : Y. Fizazi

THE ZAÏO CAVE
OR THE SIDI AHMED LHABIB SHELTER

First regional discovery of its time, revealed by the curiosity of a passing soldier, the Zaïo cave generated other excavations and other, more scholarly, systematic, scientific interests. Because of the elaborate way in which he was buried, «The Man of Berkane», serves as testimony to the symbolic thought of his era, and of a vision of the hereafter, hitherto unrevealed in Oriental Morocco.

DIRECTIONS

> Leave Berkane westward on the Aklime road until the Sidi Ahmed Lhabib Marabout. The Zaïo cave is one of the rock shelters of a mountain in the area of Zaïo.

«The Man of Berkane», discovered by a soldier!

In 1949, Roger Lafanechère, a French officer stationed in Oriental Morocco, searched a shelter nestled in a hillock facing the Sidi Ahmed Lhabib marabout.
He discovered the first human fossil exhumed in this region, quickly named «The Man of Berkane».
This discovery, made public in 1949 during a science session of the famous French Prehistoric Society, was only published in 1956 when the human bones were studied by a famous palaeoanthopologist, Professor Vallois, a leading specialist in the study of human skeletons.
The cave is a 2m corridor where archaeological excavations revealed three layers over a total depth of 1.60m.

A burial that speaks volumes about the nature of rites

Lieutenant Lafanechère discovered «The Man of Berkane» in the third layer: the skeleton was in a fetal position, buried with the teeth of bubal antelope, an alcelaphinae, an animal extinct in the region for several thousands of years. The teeth thus correspond to offerings or, more likely, personal objects. No other archaeological object was found in this layer.
The shelter where this discovery was made is located near several archaeological sites, most of which date back to the Aterian period, initially suggesting that the skeleton must also date back to this period.
However, archaeological study did not support this hypothesis, because the skeleton's position suggests a more recent date.

The Moulouya valley in the vicinity of Sidi Ahmed Lhabib with the Kebdana Mountains in the background

Photo : E. Talbi

Between the mountains of Kebdana and the Beni Snassen massif, Zaïo offers an open space, a natural cirdulation path; the Sidi Ahmed Lhabib marabout is on the right (surrounded by tall trees) - Photo : E. Talbi

Indeed, the fetal position more likely refers to the end of the Palaeolithic – as evidenced, in the eastern Rif, by the discovery of a burial in the Chefchaouen region – or even more likely, the Neolithic Era.
Whatever the age of this skeleton, it is indeed a burial, that is to say, a deliberate act of burying a dead person with offerings and/or personal objects.
The tradition of human burials, carried out for the first time about 100,000 years ago in the Middle East, continues here in Oriental Morocco.
Burying the dead with parts of wild animals – in this case bubal antelope teeth - means that the relationship that existed between humans and this alcelaphinae far exceeds that which links a hunter to game, and rather constitutes a strong «symbolic» gesture.
The fetal position is also symbolic, for it is that of the fetus in the womb. In other words, it is a sort of return to an initial state, a rite which seems to suggest that, in the minds of men at the time, death was only the beginning of a new life!

An area occupied since the ancient phases of the Stone Age

The Zaïo site – especially the town of Sidi Ahmed Lhabib – is very rich in surface prehistoric sites. According to archaeological findings, they date back to the Middle Palaeolithic period, at least 100,000 years ago in the region.
Once again, there is evidence in Oriental Morocco of continuous human presence in a given area over several generations, for thousands of years.

OULAD MANSOUR AND AÏN MELLAH
LARGE OPEN-AIR WORKSHOP ON THE BANKS OF THE MOULOUYA

**From the first Sapiens to the Neolithic Age, it would seem that all prehistoric civilizations succeeded one another in this area.
The abundance of pebbles is not uncommon here, nor is that of water. The vast area around and south of Saïdia appears rich in archaeological sites, most of which are yet to be precisely discovered, excavated and inventoried.
There are plenty of clues, spotted as early as the 1960s.**

DIRECTIONS

> To the southwest of Saïdia, on the flanks of a valley. At least two sites are grouped here.

Jbel Mcharet (138 m) borders the Oulad Mansour reliefs towards the north, making way for the Saïdia plain

Photo : E. Talbi

The Moulouya, a great wealth revealed

Prospections along the shores of the Moulouya confirmed the wealth of archaeological sites such as Tiffert or the right bank in particular (the terraces are larger), especially its high terraces.
The surface sites are typical of Aterian culture: they are lithic reduction workshops with mainly remains and preform flakes.
The recovered tools are characteristic of the period: scrapers, handaxe points, etc.
The materials, flint and quartzite, were taken from river pebbles. There are many rich, abundant deposits, almost up to the Zaïo.

South of Saïdia, the Oulad Mansour

Prospections along this vast area, including the coastal plain, revealed numerous Aterian and Iberomaurusian sites. Previously reported Acheulean stations were also observed.
The coastal plain seems promising in terms of sites which are nowadays either part of the dunes or covered by them.
Pottery, accumulated shells and animal bones were found, concentrated in several places along the coast.
A fragment of a polished ax was found nearby, west of this area, and it seems likely that there are Neolithic era sites in the area.

Before Oulad Mansour

According to Henri Maximilien Poisson de La Martinière, Oulad Mansour was the first tribe settled in the region of Saïdia, formerly called Ajroud.
That said, the history of Saïdia is much older because, according to archaeological finds, there is evidence of human presence for several thousands of years.
In fact, the Mediterranean façade of the Oriental Morocco has continuously attracted humans since ancient Palaeolithic times.
The nearby coastline was a safe and sustainable food source and Oued Aghbal - close to the border between Morocco and Algeria - was once a source of fresh water for humans and fauna.
The Oued also transported useful raw materials in the form of quartzite stones, collected by Palaeolithic groups and transformed into tools.

A late discovery for *Homo Erectus*!

Archaeological finds prove that the region has been populated since ancient Palaeolithic times.
The stone handaxes, similar to those found in the Ksabi Basin are evidence of this, however the fabrication method brings them closer to more recent Palaeolithic times.
The handaxes here were made of quartzite rocks, contrary to those of Ksabi, which were flint, but the «technique» is the same.

The last of the ancient Palaeolithic groups of Ksabi may have come populate this area of the Mediterranean coast, even if some of the findings suggest that some «incursions» occurred earlier, making the site one of the oldest of Oriental Morocco.
Whether it be during the ancient Palaeolithic phase, around a million years ago, or closer to its end around 400,000 years ago, the Mediterranean coastline was far from where it is today. This withdrawal – also called marine regression – shaped a completely different landscape for the Saïdia region.

Then came the Aterians

Aterians are proof that humans are capable of living in any climate!
The data from the Oriental does not refute this. Indeed, several tools made by the Aterians were discovered in Aïn Mellah, the most typical of which are peducled pieces, a sort of arrowhead usually made of flint but that could also be made of quartzite.
These types of objects are very effective for hunting in open environments, but not in forests.
This invention definitely gave man the upper hand over animals, as

The eastern end of the boundary between the reliefs of Oulad Mansour and the Saïdia plain and the site of Aïn Mellah. The mountains in the background are in Algeria (Rokbet el Assas and Ladjefal) - Photo : E. Talbi

The first settlers found vast territories of sand dunes near the coast with low rainfall and poorly developed vegetation, not unlike present day savannahs.

they were able to hunt large game from a distance with little risk.
Besides these pedunculated pieces, Aterians also made other tools also found near Saïdia,

called (scrapers). These are pieces of rock with very sharp edges, which were probably used to strip animal carcasses or to sharpen branches to make a stake, a type of tool made of perishable materials that would not withstand fossilization.
These technical «inventions» enabled the Aterians to remain in the area despite two periods of great drought, respectively 60,000 and 25,000 years ago.
This means that they were very adaptable to climate change and had effective social organization.
In a hunter-gatherer community such as that of the Aterians, there was a division of labour between those who were in charge of hunting and others who shared the spoils among the members of the group.
The archaeological data from this part of Oriental Morocco and elsewhere show that the degree of cohesion among a group of humans can be the best way to adapt to any climate change or to an environment with few resources.

The last hunters take over

The last Palaeolithic hunters also populated the region of Saïdia, as proven by the stone tools found there.
These are in part very fine tools called blades, pieces of flint which, when aligned side by side and fixed onto a long support, can make a kind of sickle.
Thus, these last hunters would have harvested wild grasses and, unwittingly, genetically modified them, thus facilitating their «domestication»: cereal farming therefore has its origins in this period and not in the Neolithic era!
At the end of the great drought of 25,000 years ago, the region's landscape was completely different from the environment of the Aterians or that of the ancient Palaeolithic groups: precipitation became more regular and abundant, the soils developed, favouring the growth of a rich and dense vegetation.
The fauna, which had become more plentiful, was also diversified and the Oued Aghbal, overflowing its current bed, became a precious source of fresh water.
In short, conditions were ripe for a profound change of lifestyle for the last hunters, who were tempted by a sedentary way of life!
Moreover, it is not a coincidence that the earliest phases of the Neolithic era were identified in the Oriental at Ifri Oudaden, in the Nador region.
Other, coarser tools, called scrapers, were also found in the Saïdia region: they were probably used to work animal skins.
These stone tools were made from small flint stones, probably carried by Oued Aghbal and the Moulouya, as the territory traveled by the hunters was very vast, as evidenced by the countless archaeological discoveries from Tangier to Oujda.
Saïdia was belatedly populated by *Homo Erectus*, then by *Homo Sapiens* who did not leave for thousands of years.
Far from being a refuge offering all the conditions favourable for Palaeolithic hunter-gatherers, the region of Saïdia was a place of profound changes for these human groups, preparing their transition towards a sedentary lifestyle and the production of food resources, leading to the gradual abandonment of predation.

View of the reliefs of Deher-Ej-Jir and the fertile soil of Oulad Mansour developed on the marly lands of the Miocene
Photo : E. Talbi

The plains of Saïdia, site of Aïn Mellah. Urbanisation (back) eats away at this very fertile zone - Photo : E. Talbi

THE HASSI OUENZGA SITES
FROM HUNTER-GATHERERS TO AGRO-PASTORALISTS

The area is made up of two sites: one open-air site (around 2,000m^2) and the other, a Neolithic age shelter (dated using the remains found there). The open-air site contains, at the surface and at shallow depths, numerous vestiges reminiscent of the Iberomaurusian period, around 10,000 years ago.
The shelter revealed a remarkable production of ceramics, varied and extended over a long period of time, active since more than 5,000 years before our time.

DIRECTIONS

> From the center of Afsou, take the road to Saka. The Hassi Ouenzga site is located at the foot of Jbel Bou Tawid.

The entrance to the Hassi Ouenzga shelter
Photo : Mikdad, Eiwanger & al. 2000, Linstädter, 2004, 2008, Nekkal, 2009-2010

General view of the Hassi Ouenzga shelter site - Photo : INSAP (Morocco) / KAVA (Germany)

In the Moroccan Rif, a shelter with rare content

Very few sites have yielded information about the Neolithic period because very few have been identified and excavated. Several campaigns were carried out between 1995 and 2010, covering internal deposits about 1.50m thick.

To the astonishment of specialists, the ceramics found in Hassi Ouezga (the «source of the gazelles») have affinities with, and decorative similarities to, other Neolithic deposits in Morocco as well as the Iberian Peninsula, the Algerian West, and even the Sahara. This suggests the existence of relations and exchanges.

Ancient Neolithic ceramics of Hassi Ouenzga. Left: cardial decoration. Right : reticulated decoration

Photo : Mikdad, Eiwanger & al. 2000, Linstädter, 2004, 2008, Nekkal, 2009-2010

The teachings of ceramics

Excavations uncovered the remains of 314 containers based on 619 potsherds, mostly decorated. Ceramic production from the early Neolithic age (between 5,000 and 6,500 years BCE) is largely predominant, located in the lower two-thirds of the excavated filling. In fact this ceramic would be more than a millennium older than the one introduced to Morocco from what is currently Spain. It was hitherto unknown in Morocco.
Most of the containers were made using a coiling technique (clay rolled with the palm of the hand and mounted, row by row on a clay plate base or a coil rolled onto itself), a typical practice of primitive pottery before the invention of the potter's wheel. Incidentally, most of the breaks occurred at the joints.

Many different shapes have been found.
The decoration is also quite varied and makes use of:
• tools, such as combs, spatulas and awls;
• natural elements, such as shells (including cardium shells) or plant fibers.
This diversity leads to variety in ornamental motifs: gridded strips, nested triangles, chevrons, furrows, etc. Most patterns are bordered by horizontal stripes.

Stone, bone, shells…

Stone tools and carving flakes are present at all levels of filling. The material (almost entirely flint) comes from the same sources (Aïn Zohra and shores of the Moulouya) as for the lithic industry of nearby caves in Ifri n'Ammar and Ifri El Baroud. A few bone tools and perforated shells (including ostrich egg «discs» were also found.

Mounted necklace from sliced ostrich egg shells

Photo : Mikdad, Eiwanger & al. 2000, Linstädter, 2004, 2008, Nekkal, 2009-2010

THE KSABI BASIN
HOW EARLY HUMANS TOOK OVER THE ORIENTAL

Taking a step back and looking at the various discoveries, especially their datings, suggests what might have been the path taken by *Homo Erectus* along the natural corridors, which offered both good living conditions, with necessary resources, and facilitated further progress and the search for even better conditions. The challenge is to understand how humans progressively settled the Atlantic and Mediterranean facades of the Maghreb. The Ksabi basin contributes to better visualizing this path.

DIRECTIONS

> The Ksabi basin is one of many compartments of the middle Moulouya. It is located at the intersection of the High Atlas in the South and the plateaus of the Upper Moulouya in the North. Several Acheulean sites were identified, covering almost all periods of the lower Palaeolithic.

The Moulouya, meandering at the basin

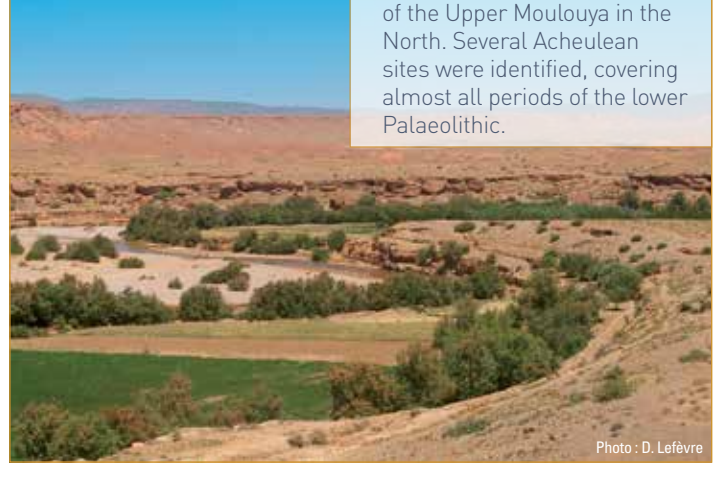


Photo : D. Lefèvre

A corridor used by *Homo Erectus* ?

Africa is the cradle of humanity, as evidenced by archaeological and palaeoanthropological research. Fossils were in fact discovered in East Africa, dated to be about 6 million years old and related to Millennium man.
Like *Homo Erectus*, Millenium Man would have been biped. This supports the «East Side Story» theory that humans took advantage of the movements of the Gregory Rift in Kenya to live in the arid zone, sparsely wooded, with abundant predators. Only bipedalism – particularly the ability to run for long distances – enabled them to survive in a very hostile environment.
This theory was later reconsidered, following recent discoveries at the southern borders of North Africa – specifically in Chad – of fossils dated to be around 7 million years old. These discoveries show that human presence is ancient in many places on the African continent.

Seizing the Oriental

In Morocco, the earliest traces of *Homo Erectus* were first identified in the world-famous sites of Casablanca, and more recently by data from Oriental Morocco. These appear to confirm that the presence of *Homo Erectus* is just as ancient in this part of Morocco.

What remains to be determined are the pathways used by *Homo Erectus* to reach the High Plateaus and the lower valley of the Moulouya.
Homo Erectus left the cradle of eastern Africa to conquer other realms on the continent and elsewhere. It would seem that Morocco was probably populated from the Chadian area, which is only about 3,000km away, much closer than the Rift valley, which is more than 6,000km away.
Ancient rivers, now fossils and only visible on satellite images, were «humid» corridors, with abundant water and fairly easy to capture fauna.
Following the fauna, *Homo Erectus* may have reached the Moroccan Atlantic coast and the Oriental region at the same time.

A dry branch of the river - Photo : David Lefèvre

Close-up view of one of the spaces of the Ksabi Basin - Photo : David Lefèvre

Ksabi basin: human presence lasting 400,000 years!

The Ksabi basin is an intra-mountainous corridor, crossed by the Moulouya, which empties into the Mediterranean. It may have facilitated the penetration of *Homo Erectus* into the Oriental.
This would explain the presence of several sites dating back to the ancient phases of the Palaeolithic in different places around the basin: Selloum, Tamdafelt, Megdoul…
The Ksabi basin is the only area on the borders of Oriental Morocco where all phases of the ancient Palaeolithic are recorded, as the sites that have been discovered contain evidence of the ancient phases of the «Acheulean» culture.
More surprisingly, the basin was not only an area of passage but also the site of more or less permanent «habitat» for more than 400,000 years, from part of the Pleistocene period (more than 700,000 years ago) until the arrival of the Modern Man around 300,000 years ago.

Climatic hazards and their consequences

This situation can be explained by climatic changes, with alternating favourable periods and much drier periods, the latter drastically reducing *Homo Erectus*' living space.
Indeed, the Quaternary experienced climates varying between humid and arid, and these changes strongly affected human groups. In the Ksabi basin, humid periods resulted in an increase in the flow of the Moulouya, which carried large flint nodules and quartzite stones, raw materials used in the making of handaxes, the shape of which was sometimes perfectly symmetrical.
These conditions favoured the replenished supply of water tables and water points were no longer scarce throughout the basin, even when humans moved away from the Moulouya.
These favourable periods were followed by other, more difficult times, during which precipitation became irregular, even rare, vegetation became more sparse and

drought became part of daily reality for humans. However, *Homo Erectus* must not have feared the high daytime temperatures as much as the sharp drop in temperatures at night, bringing glacial cold. These strong temperature contrasts marked the rock formations with cracks caused by rapid freezing and thawing.

Homo Erectus, the Man of all climates

Archaeologists studying the Ksabi basin will likely find an explanation for the «survival» of *Homo Erectus* in an ice environment once they arrived in Europe!
Arid and cold periods in the basin likely helped humans learn to adapt to temperature differences worthy of great European ice ages. They were able to remain in this area, which was at first glance inhospitable, thanks to ground water, supplied over thousands of years, which turned it into an «oasis» in a desert environment.

Small incursions into the Oriental!

The Ksabi basin recorded every phase of the ancient Palaeolithic, whereas in the rest of the Oriental, only one (or two) phases are present in places such as Aïn Mellah, Aïn-Bni-Mathar/Gafaït, Oulad Mansour or Ammorene near Nador. The basin thus functioned as a corridor for the first arrivals, *Homo Erectus*, which would explain their presence in these places such a long time ago, dating back close to, or exceeding a million years. This mobility would then have been restricted to the Ksabi basin only, before further movement to the North, in the lower Moulouya valley and towards the High Plateaus, but without deserting the basin.

A history of techniques!

The continuity of human presence in the basin gave rise to «technical inventions», observed in the methods of making handaxes, the profile of which became increasingly narrow over time and almost exclusively made of flint, an abundant material found in the basin and easy to carve.
It is also in this area that handaxes show the beginnings of a new way of making tools that changed Palaeolithic «technical» history, called the Levallois method by archaeologists. This method involves predetermining the shape of the tool before detaching it from a core (flint nodule or quartzite stone). This method, appearing elsewhere other than in the Oriental, was adopted bit by bit in many places in the ancient world, either by local invention or following contact from different human groups.
In the Oriental, it would thus seem that only the Ksabi basin can provide information on the very long history of the ancient Palaeolithic period, and especially the Acheulean period.

THE MOUNTAINS OF OUJDA

Photo : Y. Fizazi

Jorf El Ouazene in the area of Rhafas - Photo : E. Talbi

The Mountains of Oujda are a chain of medium mountains where the reliefs are the result of a specific tectonic structure, called horsts and grabens. This territory is called the «Land of Horsts».
The Mountains of Oujda constitute a sort of transition between the Middle Atlas chain, represented by the Beni Snassen, and the immense domain of the High Plateaus, which borders them to the South.
The stratigraphic palette, ranging from the Primary Era to the present, reveals different types of rocks. Red clays and doleritic basalts of the Triassic differ from the crystalline base of the Primary. Then, above the Triassic rocks, carbonate rocks (dolomites and dolomitic limestone) of the Jurassic period were deposited, creating cliffs and tabular reliefs that are typical and mark the landscape.
This arrangement is very similar to that of the Beni Snassen Massif, with many fresh water sources at the base of the limestone cliffs. This favoured the settlement of prehistoric Man.

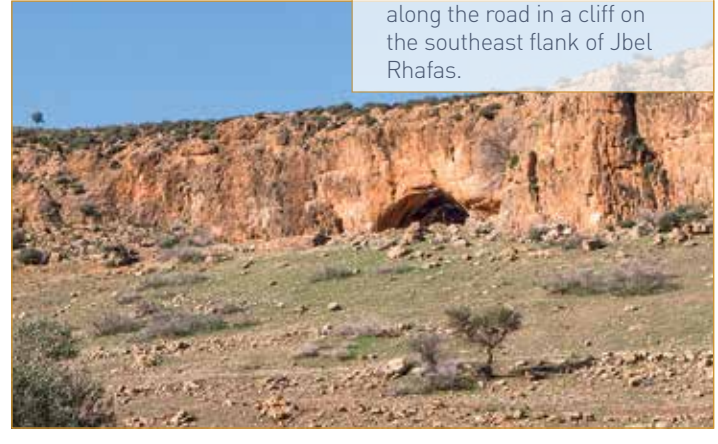
THE RHAFAS CAVE
ANOTHER PALAEOLITHIC SANCTUARY

The first archaeological excavations of the Rhafas cave date back to the 1980s. They ceased in 1998 and resumed in 2007, as part of a joint effort between the INSAP and the University Mohammed 1st on the Moroccan side, and the Max Planck Institute on the German side, studying broad issues and various sites throughout the Kingdom. The discoveries made here confirm those of the Beni Snassen Massif (in particular, the Grotte des Pigeons) with regards to the Middle Palaeolithic, especially the Mousterian and Aterian periods.

DIRECTIONS

> From Oujda, take the road to Touissit. The cave is located along the road in a cliff on the southeast flank of Jbel Rhafas.

A monumental arch entrance, nowadays clear due to deforestation and erosion



A favourable site

The tabular reliefs of the mountains of Oujda and the large faults between them are conducive to the clearing of cliffs continually sculpted by erosion. Here again, the karstic network has gouged the dolomite to allow the passage of groundwater, and the Rhafas cave, like others, is a result of this. It takes the appearance of a vast room carved with a pointed arch, ending in a bottleneck.
Near Jbel Aourir, it overlooks the small plain drained by Oued Tairet (900 m in altitude).

Unfinished excavations

Whereas Neolithic age discoveries remained quite limited (Human remains most likely belonging to a single man and lithic objects in the shape of lamellas), the Middle Palaeolithic periods allowed for the discovery of more diversified tools: in particular, different types of scrapers, graters, handaxe points, laminar objects and pedunculated pieces.

The Rhafas nomads

The earliest presence at the site dates back more than 130,000 years ago. It is possible that the cave provided shelter for the last generations of *Homo Erectus* before the first *Homo Sapiens*, but at a time that remains unknown.
It is mostly the Mousterean and Aterian civilizations of the Middle Palaeolithic who left trace evidence behind.

Aterian pedunculated pieces discovered in the Rhafas cave- Photos : A. Bouzouggar

There have been many archaeological finds, which give an idea of the nomadic behaviour of the humans who made use of this natural shelter (more than just living space) in prehistoric times.

Two observations enabled a better understanding of some essential information about the lifestyles linked to this Palaeolithic cave:
• floors littered with tools and remnants of tool carving and cooking;
• traces of fire corresponding to ancient fire pits, which are still visible in the sediment.
The cave was abandoned during other periods (perhaps the dryer ones?) as the archaeological finds are mostly limited to bone remains of microfauna, such as gerbils, which are typical of dry areas.

A cave for those passing through, not for living

This observation invites a conclusion that is commensurate with the archaeological content: it is clear that humans cooked, cut meat and carved stone in the cave, but the cave mostly provided shelter for small groups of humans, mainly for short periods of time.
These humans were definitely nomads, but which type of nomadism?
Analysis of the remains found in the cave show that a good part of the carved stones came from the immediate surroundings or fairly nearby: within a radius of less than 10km.
Coarse grain rocks such as quartzite and some schists were available in immediate vicinity of the cave. However, chalcedony – well suited for making scrapers and knives – undoubtedly comes from the southern part of Oued El Hay, 60km southwest (3 to 4 days on foot). Phthalite was also available and utilized.

Pedunculated tip made of phthalite found in the area of the Rhafas cave- Photo : E. Talbi

Combined with findings made elsewhere and natural shelters occupied at the same time, these conclusions are valid for a vast area around Aïn-Bni-Mathar, whereas the opposite is true of Mediterranean area sites. Middle Palaeolithic sites sometimes reveal small supplies of rocks of distant origin.

Intelligent nomadism

In point of fact, the only acceptable and logical conclusion is that nomadic hunter-gatherers traveled through this large area, moving from the of the High Plateaus to the Mountains of Oujda and to the wooded plains of the Mediterranean; at times in the alfa and wormwood steppes, other times the forests of thuja and Aleppo pines.

Excavations of the Rhafas cave are ongoing - Photo : E. Talbi

These movements indicate that field experiences were memorized and transmitted from generation to generation: they knew where to find necessary life resources. Through the climatic changes – as well as the environmental ones – these nomads harnessed the quality of rocks, the nature of tools (more or fewer scrapers, for example) and even their size.
The end of the Middle Palaeolithic - around 80,000 years ago – is clearly recorded in the cave.
The Aterians became more selective in terms of raw materials – mainly flint – and also made and used ornamental objects in the form of perforated marine shells.
These objects are of great importance because the cave is about 60km from the coast. It is thus possible that the shells were brought back or came from a system of trades between coastal Aterian groups and inland groups. There was thus a great deal of intelligence in this nonetheless very remote civilization.

A hunting shelter?

Short stays for small groups: if these conclusions are accurate, the Rhafas cave may have been used as a simple hunting shelter. Everything confirms that, over the long period that was the Middle Palaeolithic, behaviours hardly varied, or only did so very gradually in response to environmental and climate changes.
Thus, the majority of animal remains, over a long period – the oldest – is made up of horses, zebras, gazelles, oryxes, white rhinoceros, pieces of turtle shells or ostrich eggs.

From the cave, a clear view of the vast plain - Photo : E. Talbi

This type of diet continued into the more recent period of occupancy, but there were also warthogs, deer and Barbary sheep.
Enough to restore and reward the hunter!

Iberomaurusians as well

New archaeological research has been undertaken in the cave by a team including researchers from INSAP, the University of Mohammed 1st in Oujda (Geoheritage, geo-environment, mining and hydric prospection laboratory) and the Max Planck Institute in Germany.
They revealed, for the first time at the site, traces of Iberomaurusian presence (Upper Palaeolithic) dated at about 20,000 years ago.
This suggests that the Rhafas cave is one of the oldest sites of this civilization in all of North Africa.
Of course, the Iberomaurusians essentially hunted and consumed Barbary sheep and remained in the cave until about 16,000 years ago.
We also know that this chronological period - between 20,000 and 16,000 years ago - were particularly arid times.
It thus seems reasonable to conclude that the Iberomaurusians were able to find the necessary means and resources – and especially the social organization (division of labour) - to overcome these rather unfavourable climatic conditions.

THE RHIRANE SHELTER SITE
THE LITHIC INDUSTRY OF THE NEOLITHIC

The site was listed as early as 1956, bordering the High Plateaus (to the South) and the mountains of Oujda (to the North) to which it belongs. This shelter is the oldest to have been studied in this area and one of the few to have shed some light on the local Neolithic age, like the Hassi Ouenzga shelter in the Rif. The transition of hunter-gatherers to agro-pastoralist societies is shown here not by pottery but rather by the evolution of the lithic industry, the remains of which are abundant among the many recovered vestiges.

DIRECTIONS

> From Oujda, go in the direction of Jerada. The Rhirane shelter is located in a cliff facing Jbel Mahsseur.

The environment of the Rhirane shelter

Photo : E. Talbi

Photo : E. Talbi

Favourable location and orientation

The Yala mountains make up the southern flank of the mountains of Oujda. In these average-sized mountains, made of limestone and dolomite and deeply faulted, the cave opens to a façade facing south-southwest.
The shelter is thus very sunny year round and protected from the prevailing west winds.
Within a radius of 300m, the Oued Sedra appears perennially at several water points. The vegetation, which has declined and is now predominantly thuja cedar, was likely significantly different and much denser at the time when the shelter was occupied.

A particular industry

The interior filling was studied using a probe over 1.80m in depth. The upper layers yielded vestiges of Neolithic age industry and little pottery. The lower layers mostly contained animal remains. Whereas the traces of lithic industry are abundant, the bone industry seems absent, and a single perforated shell was found, the only adornment element observed.
The basic materials are varied and come from sites identified within a radius of 30km around the shelter (less than 2 days on foot).
Mostly made up of lamellas, the production is commensurate with Iberomaurusian works.

Neolithic herders

The shelter seems to have been used, at least partly, as a sheepfold, especially between 4,600 and 9,000 years ago. Neolithic goat herders were also hunters and ate wild boar and other game (gazelles, hartebeests, horses, donkeys…). They also collected ostrich eggs.
Excavations showed that these humans knew how to make pottery, which they decorated with motifs (embossed, chiseled, or stamped).
The same type of lifestyle and production is found in several shelters of similar nature in the Aurès massif.

JBEL MAHSSEUR
A NATURAL FORTRESS

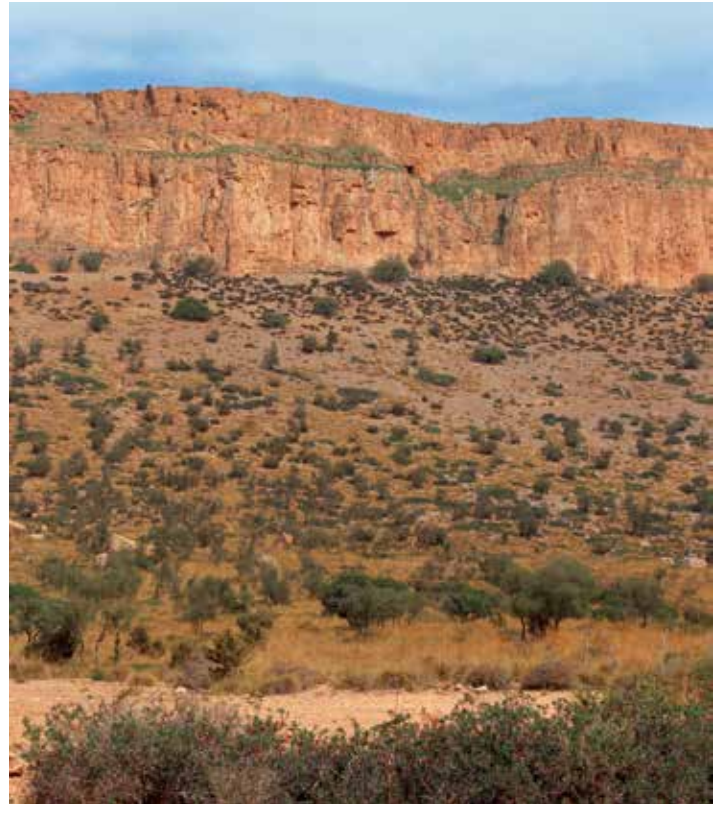
Like a medieval castle, Jbel Mahsseur emerges from gentle, green surroundings over which it reigns.
The impressive limestone mass is supported by sedimentary deposits, basaltic rocks and clays. Infiltrated water therefore flows horizontally, creating caves and springs. In point of fact, water has never been scarce.
Materials available nearby provided matter for a productive lithic industry, undoubtedly as early as the Palaeolithic.

DIRECTIONS

> Located south of Oujda, Jbel Mahsseur (or Mahçar) is 1,351m high, dominating the surrounding topography within the mountains of Oujda.

Jbel Mahsseur
In its surroundings

Photo : E. Talbi



The Jbel Mahsseur cave, opening in the middle of the side of the cliff - Photo : E. Talbi

In geological terms, the mountain is made up of a crystalline base, surmounted by a sedimentary cover beginning with basalts and red clays of the Triassic, followed by limestone and dolomites of Lias, which form a large cliff at the top of this mountain.
This layout, previously mentioned in the introductory texts, is at the origin of several water sources, located at the base of the cliff on the northern side. Water, which was certainly more abundant in the past, favoured the development of large pistachio trees of the Atlas on the northern side of the mountain.

Water sources at the base of the cliff on the north side of Jbel Mahsseur

The natural fortress that is the Jbel Mahsseur cliff, along with the availability of water, attracted

Remains of the old constructions that are similar to the Moulay Ismail's walls - Photo : E. Talbi

the powers that prevailed in the area: they used this place as a military stronghold. The remains that endure still today date back to the beginning of the Alaoui dynasty, which reigned over this area towards the middle of the 17th century.

The countless traces of lithic industry found in the Jbel Mahsseur area testify to the ancient presence of prehistoric humans, who undoubtedly occupied the cave, especially as it was always easily spotted in the middle of the cliff on the southern side. This conclusion is all the more logical in that the cave is located halfway between the archaeological caves of Ghafas and Guenfouda, and is also near the Rhirane shelter: it therefore could have just as easily belonged to a network of human settlements as to hunter-gatherer routes.

It is one of the rare caves to still be inhabited today!

Pedestrian path to the Jbel Mahsseur cave and the vestiges of its history

THE GUENFOUDA CAVE

WITNESS OF A VANISHED FAUNA

Close to the regional capital, in the heart of the Oujda mountains, the Guenfouda cave has been excavated since 2004 by researchers of the Mohammed 1st University of Oujda, affiliated with several Moroccan and foreign institutions. It has proven to be rich in animal remains and some species have been found in a fossilized state for the first time in Morocco. A lithic industry and ceramic shards were also discovered.

DIRECTIONS

> In the mountains of Oujda, a few kilometers east of the village of Guenfouda, the site can be reached from Oujda by the road to Jerada.

A large opening on the side of a wall in a space that was formerly richer in vegetation

Photo : E. Talbi

THE HIGH PLATEAUS AND THE SOUTH

The cave and its history

The cave is carved in the Jurassic-age carbonates of Jbel Metsila.
The cave is in the form of a fairly long gallery (about ten meters), separated at the back into two cavities on either side of a column (stalagmite). From the outside, the vault opens up as an archway (about 5m at the base and over 4m from the ground level formed by filling): this opening allows for lighting and ventilation, but the back remains very humid and as a result, calcareous concretions are formed.
The site was marked for its archaeological importance in 2003 by Alain Billy, director of the French Institute of Oujda. The first archaeological excavation campaign was organized in 2004 as part of a collaboration between the French Institute of Oujda, the INSAP and the Association Nature et Patrimoine (Nature and Heritage Association).

A very favourable site

The mountains of Oujda (or chain of Horsts) make up a mountain range dislocated by a series of faults. The Guenfouda cave (commonly known as Ghar Zebouj) adorns one of the cliffs born of these faults; its entrance, turned to the East, espouses its orientation.
The position is a strategic observation post: between Jbel Metsila (1,209m) and Jbel Boussoufane (1,045m), the valley stretches several kilometers to the East, with a width of about 2.5m; an observatory for both security and hunting. The entrance, up high, offers a useful vertical view for anyone acting as sentinel.
Access is easy and the cave is well ventilated. There are several oueds nearby (including Oued Isly). These beneficial characteristics undoubtedly explain the prolonged occupancy of the place, as evidenced by the depth of its filling as well as the discoveries made there.
As in many other caves of the region, the first soil is ashy (several tens of centimeters thick) containing shells of terrestrial gastropods, charcoal debris and scattered burnt stones.

Promising excavations

Until now, the site has mainly yielded traces of Neolithic human presence in the form of animal remains corresponding to domesticated animals such as sheep and goats, and wild animals such as Barbary sheep, wild boar, or horses.
The Guenfouda cave is perhaps far from having given up all of its buried treasures. The excavations that have been undertaken are only partial and have not yet reached the dolomitic limestone below: excavation campaigns continue every year.
The ongoing archaeological excavations may reveal the presence of older archaeological traces.

Gafaït landscape

South of the Oujda mountains, which are part of the eastern Middle Atlas, the territory opens onto the High Plateaus, then to the eastern High Atlas to the South, including the Saharan oases of Figuig and Ich. The desert world meets the High Plateaus, whose altitude exceeds 1,000m. They share a high degree of luminosity and a certain aridity that becomes increasingly formidable the further South one travels.

Combining the work of archaeologists with those of other disciplines suggest that these vast regions experienced periods with more water and were thus more favourable to human settlements, particularly for Palaeolithic hunter-gatherer groups. The animal remains confirm this, as do the products and artifacts of the lithic industry.

We now know that they suffered severe climatic crises that resulted in forced migrations and the conquest of new areas.

Exploiting previous discoveries and expert analysis helps us better understand this distant past: going back nearly a million years, a journey not without hiccups but nonetheless testimony of a fairly permanent and astonishingly long occupancy.

THE MARJA AND AIN-BNI-MATHAR SITES

SOME OF HUMANITY'S MOST ANCIENT TOOLS

As is often the case, it is undoubtedly the proximity of water – springs and oueds – that explains this very ancient human presence. The observed lithic industry refers back to more than a million years ago, to the first carved stone tools. It continued and was perfected throughout the Palaeolithic period, then saw the arrival of the Neolithic era with the appearance of pottery shards in the more recent layers. This site testifies to a long and uninterrupted human occupancy in Oriental Morocco.

DIRECTIONS

> From Oujda, take the road to Jerada. The site of Marja is on the right back of Oued El Hay, North of the center of Aïn-Bni-Mathar

Water (here Oued El Hay) remains the key to understanding the enduring, ancient and permanent settlement of prehistoric man

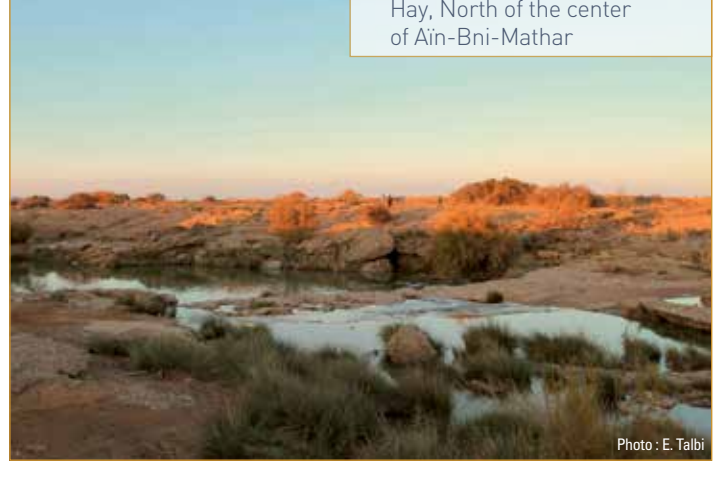


Photo : E. Talbi

The earliest ages of the lithic industry

The discovery of a very ancient occupation of the Aïn-Bni-Mathar region dates back to almost a century ago, as noted by Paul Pallary in his prehistoric discoveries of eastern Morocco between 1923 and 1926.
Numerous artifacts and Palaeolithic tools were found in different places around this area, which is rich in water sources that feed the Oued El Hay still today.

The dating method based on inversions of the Earth's magnetic field required comparison with other techniques, using data from fossilized fauna to precisely specify the age of human occupation in this part of Oriental Morocco. Stone tools are revealed to be pebbles, partially modified on a single surface or on both sides, which archaeologists commonly call choppers and chopping tools: such tools are considered – according to data from East Africa – to be the oldest tools made by man (Oldowayan lithic industry).

Artifacts of flint stone carving, common at the site - Photo : E. Talbi

Recent studies by researchers of the Mohamed 1 University and the Spanish University Rovira I Virgili in the area around Aïn-Bni-Mathar - Gafaït have revealed stone tools that would be more than a million years old.

Other tools were discovered in Aïn-Bni-Mathar - Gafaït, corresponding to handaxe pieces typical of the Acheulean (the eponymous site of which is Saint Acheul in France). They appeared in the early phases of the Palaeolithic.

Travertines of Oued El Hay - Photo : E. Talbi

Unlike carved pebbles, the handaxes were probably used to cut animal carcasses or for woodworking. Whether they be choppers, chopping tools or handaxes, stone tools are a major step in humanity's development.
Indeed, many thousands of years ago, humans were able to make tools from other tools (or to use them as is), in other words by using a stone as a striker, or hammerstone, to change another stone and give it a sharp edge. This operation seems obvious and simple. However, thousands of years ago, it required humans to coordinate cognitive actions in the brain and motor movements of the hand to arrive at such a result...which ultimately allowed humans to exercise control over their environment.
It is precisely at Aïn-Bni-Mathar that traces of a simple lithic industry were discovered for the first time in this part of Morocco.

Aïn-Bni-Mathar links the Atlantic to the Mediterranean

The in situ evidence of a long-standing human occupation has helped to revive the debate on the way in which the genus Homo moved from Africa to Europe.
It is widely accepted that East Africa is the cradle of humanity and archaeological excavations have uncovered human activity in Casablanca just over a million years ago.
The data from Aïn-Bni-Mathar - Gafaït would then constitute proof that human movement from the Atlantic coast towards the Mediterranean was very rapid.
One of the pages of this very ancient humanity in North Africa was probably written in Oriental Morocco; more precisely at Aïn-Bni-Mathar - Gafaït.

The hypothesis of a crossing at the Gibraltar Strait, an alternative to the widely accepted theory of a passage in the East, could not be validated without proof of very ancient human presence on both sides of the western Mediterranean.
Following the studies on the European side, which revealed many sites of human occupation between 1 and 1.6 million years ago, the data from Aïn-Bni-Mathar - Gafaït, attesting to an equally ancient human occupation, support the hypothesis of the prehistoric humans crossing the strait towards the Iberian Peninsula after having populated North Africa.

Between caves and open air

The Marja site is around 15km north of Aïn-Bni-Mathar. The Excavations have revealed human activity similar to that uncovered in the caves of the Oriental: over a surface of about 100 square meters, structures such as fire pits once served to cook food and to stay warm during the glacial nights in the High Plateaus. Of course, all that remains is the shape dug into the ground and the stones that were used to retain the embers.
Next to these structures, ostrich egg fragments were found, along with several stone objects and a few pottery shards.
The stone tools discovered in situ are mainly lamellas, blades and arrowheads.
The Marja site, a space for the activities of Iberomaurusian and Neolithic groups, once again proves that the Oriental, as well as the rest of Morocco, were continuously occupied by humans for at least 1 million years!

A vast open-air site that has probably not yet revealed all its secrets - Photo : E. Talbi

THE AÏN-BNI-MATHAR WEATHER STATION
AN APPROPRIATE SETTING FOR OPEN SPACE HUNTING

Near Aïn-Bni-Mathar, this site benefits from the advantages provided by Oued El Hay but has the disadvantage of being an open space; whereas it attracts wildlife and facilitates surveillance, it also makes approaching and hunting game more difficult. The invention of pedunculated tips, allowing for the possibility of throwing a projectile towards the target, made it possible to hunt from a distance, thus protecting man from his predators as well as from the reactions of the hunted animal.

DIRECTIONS

> The weather station is located near the Oued El Hay, North of the center of Aïn-Bni-Mathar.

The site is irrigated by the overflows of Oued El Hay

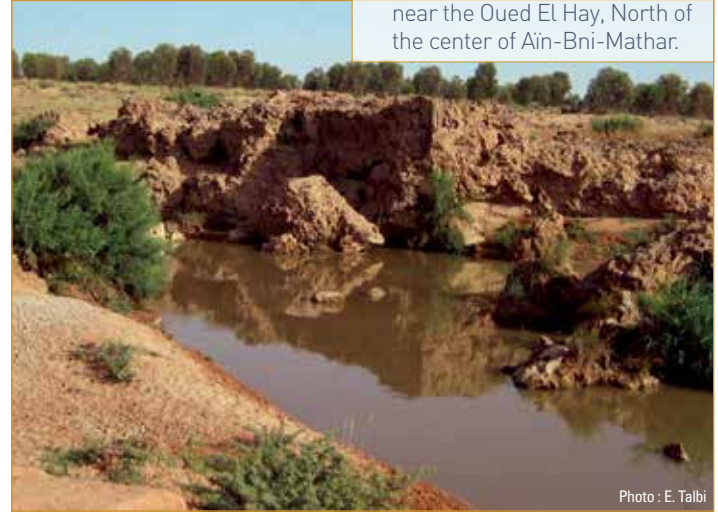


Photo : E. Talbi

Climate crisis – already!

A little over 130,000 years ago, the climate of the High Plateaus was warm and precipitation barely exceeded 500mm per year.
Human groups of the Middle Palaeolithic settled in the region of Aïn-Bni-Mathar, which had been a very attractive area since the *Homo Erectus* period.
They probably came from the South, specifically from the Ksabi Basin.
Curiously, in the oldest archaeological layers, a handaxe resembling *Homo Erectus* tools was found. This would therefore support the continuity of human settlement in this part of Oriental Morocco, uninterrupted for several thousand years.
The tools of this period – mainly scrapers for cutting (meat?) or working hard materials (wood or bone) – indicate that human groups found ways to adapt to climatic changes with few resources, which they were able to share and maximize the use of.

Taming nature!

Aïn-Bni-Mathar, as its name suggests, is a source of water. As such, it attracts humans and animals. Its weak point is the absence of sheltered areas for protection from animals as well as for approaching and hunting them.
Aïn-Bni-Mathar offers several hard rocks for making tools, including chalcedony, which is easy to cut, durable and particularly efficient for cutting meat or scraping hides.
The landscape, mostly exposed, drove human groups, especially Aterians, to develop high performance tools, such as pedunculated pieces. It was thus quite easy to watch for animals when they drank from the source and then to hunt them there.
This Palaeolithic hunting technique allowed humans to hunt at will without risk of confronting other predators.
The latter were no match for well-equipped and organized human groups, who became formidable competitors, triggering the decline of other predators by upsetting the food chain.

Where did the Iberomaurusians go?

The site contains no archaeological traces from the Upper Palaeolithic nor the Iberomaurusian period. On the other hand, Neolithic groups did settle there.
This absence indicates great changes in human behavior during the Upper Palaeolithic, around 20,000 years ago, when the caves and shelters were massively occupied.
Their lifestyle gradually changed from nomadism to sedentariness. The site was probably visited in search of raw materials, especially chalcedony, but not settled.
It was settled during the Neolithic, with the demographic growth of the Holocene.

THE KHENEG KENADSA SHELTER
THE ODDITY THAT CHALLENGES ASSUMPTIONS

An anecdotal discovery, traces that are probably Aterian, occupation from the Palaeolithic to the Neolithic… but with no domestic animal remains, a strange over-consumption of ostrich eggs, and a very peculiar funeral rite: Kheneg Kenadsa is the site of a cavity that served as a shelter and is decidedly very intriguing.

DIRECTIONS

> From Tendrara, the site is located to the East of the road that leads from Oujda to Bouarfa and Figuig.

The Kheneg Kenadsa cave in its immediate surroundings, nowadays arid

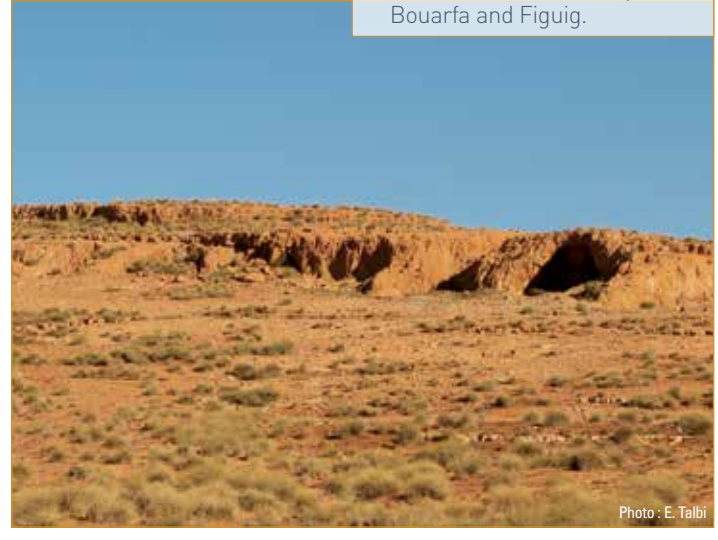


Photo : E. Talbi

Another discovery owed to the military!

The cave was discovered by the French commander Biard and the civil controller of the time, Gallié. The latter commissioned one of his subordinates, head of the Tendrara post, to conduct a survey there in 1953. When human bones were uncovered, local authorities called on professional archaeologists. Abbot Jean Roche, who was probably very busy with the excavations of the Tafoughalt caves – especially the Grotte des Pigeons - asked André Jodin to continue the excavations in the Kheneg Kenadsa cave. These were carried out in 1955.

Aterians first!

With his team, André Jodin proceeded to sift through the debris from previous excavations and surface finds. He collected a pedunculated piece, a sort of arrowhead of Aterian appearance. This would constitute proof that the cave was inhabited since the Palaeolithic.
Other stone tools found in the cave – sometimes mixed with other more recent ones, support this hypothesis.
The Aterians must have been attracted to the cave for three reasons:
• first of all, the cave is located in a massif of Jurassic limestone called Chebkat Laqnadsa, and offers possible shelter from both anthropic or animal dangers;
• secondly, there are Cretacious geological foundations near the gave, between 145 and 65 million years old, which could be used as sources of raw materials – especially flint – necessary for making tools
• the third reason is the presence of a body of water, often with water flow during heavy rains, a good place for hunting as it attracts large herds.

Big consumers of ostrich eggs

According to the first excavators of the cave, the two layers of filling have yielded about 11kg of ostrich eggs!
The nutritional value of this egg is well established, as a single egg is the equivalent of 25 chicken eggs…!
Another surprising fact: although the filling of the cave is attributed to the Neolithic age, no bones of domesticated animals were exhumed.
Kheneg Kensadsa would thus be a very peculiar Neolithic shelter, where the diet would have been essentially based on the consumption of ostrich eggs.
In addition to the ostrich, the inhabitants of the cave also hunted and apparently consumed wild horses, cervidae and bovidae.
The cave was probably occasionally occupied by large predators, such as panthers, a few bones of which are found among the animal remains discovered at the site.

Products from the carving of flint found in the rejections of the first excavations of the site: a very nice quality in the finesse and the sharpness of edges

Photo : Boudchiche L. (2 GPMH, Faculté de Sciences d'Oujda)

Tools for hunting and working hides

Several stone tools were found in the cave, in the form of long pieces of flint, which archaeologists call blades, or lamellas, with sharp edges and pointed tips.
Sometimes, the inhabitants of the cave shaped the edges so that they became very thick, which facilitated their insertion into wood or bone supports. Fastened in this manner, the lamellas and blades became powerful hunting tools.
However, the nature of tools was predominantly of the type called «scraper». A scraper is a stone tool with one end that has been modified by retouching (chipping away small bits), giving the modified edge the appearance of our modern day bread knives! Traceological studies (science of the study of the function of archaeological objects) carried out on similar tools in other sites have shown that the scraper was probably used to work animal hides.
The occupants of the Kheneg Kenadsa cave excelled not only in the making of stone tools, but also the bone industry.
As such, certain tools were made using this hard animal material, proving that hunted game was exploited to the maximum.

At a certain time, the inhabitants of the cave experienced a surplus of food resources, which explains the discovery of several pottery shards, probably used for storing food within the archaeological layers.

A very special funeral rite!

Two human skeletons were found in the Kheneg Kenadsa cave.
The first was discovered during the first excavations and the collecting of bones took place according to the practices of the time, which is to say without the precautions that are in place today.
The second burial, exhumed during the excavations of 1955, provided more elements that proved very surprising. Indeed, a large part of the body was missing (from the pelvis to the skull) and the burial was surrounded with stones in the form of a grave slab! A rare practice in Neolithic burials in Morocco.
Was it a funeral rite? Another mystery added to the fascinating prehistory of the High Plateaus of Oriental Morocco.

Opening of the Kheneg Kenadsa cave - Photo : E. Talbi

AÏN FRITISSA
FROM ANCIENT PALAEOLITHIC TO NEOLITHIC

The site played host to a succession of prehistoric civilizations, undoubtedly thanks to the favourable conditions in the area. The analysis of discoveries, especially the stone tools, greatly contributed to improving archaeologists' understanding of the Palaeolithic in this region and in North Africa in general. These objects tell the story of prehistoric humans adaptations to the changes in their environment, as well as technological changes in terms of the nature of work methods or choice of materials, as well as the types of tools made.

DIRECTIONS

> Also called Oulad Jerrar, Aïn Fritissa, an open-air site, lies South of the town of Guercif.

General view of the site

A major site in the Oriental discovered… by a doctor!

Aïn Fritissa – the archaeological site - was discovered at the beginning of the 20th century by Doctor Sicard, a medical doctor who offered his findings to the prehistoric and Gallo-Roman museum of Strasbourg.
In 1939, Armand Ruhlmann, an Alsatian prehistorian who had become Director of Prehistoric Antiquities in Morocco, published, together with a colleague, Doctor Sicard's collection in the French Prehistoric Society bulletin. Later, this archaeological material was sent to the Musée de l'Homme («Museum of Man») in Paris.
Posted in Rabat, A. Ruhlmann went to Aïn Fritissa where he carried out surface collection and excavations. With water circulation having greatly mixed the pieces, it was impossible to place the archaeological material into their initial layers.
A decade later, A. Ruhlmann died tragically from a fall from an archaeological section during the excavation of a cave El Aïoun (near Oujda).
This accident serves as a reminder that the profession of archaeologist is not without risks.
The site was then forgotten until 1957 when the finds of A. Ruhlmann were entrusted to J. Tixier, who was known for the study of stone tools.

A source for two : *Homo Erectus* and *Homo Sapiens*

J. Tixier was able to make very clear separations within A. Ruhlmann's archaeological finds and thus demonstrate that the site had been frequented from the ancient Palaeolithic period, at the time of *Homo Erectus*, until the Neolithic, including the Middle and Upper Palaeolithic, with *Homo Sapiens*!
The site was attractive, because it provided fresh water to Palaeolithic hunters and to their game, as well as to Neolithic farmers and herders.
Fossilized fauna discovered in situ, very rare, revealed the presence of rhinoceros, wild ox, and horse. Other animals, which were domesticated, were also identified: they included goats and the sheep. This confirms the long history of human settlement at this site.
The spring's surroundings still provide abundant raw material of good quality, in the form of stones and flint pebbles.
This rock, prized by Palaeolithic and Neolithic groups, is easy to carve and very effective for carrying out certain tasks which were common in the daily life of prehistoric groups, such as cutting meat or working animal hides.

Scrapers - Source : Jacques Tixier in Bulletin d'Archéologie Marocaine (1958)

Aïn Fritissa reveals the path traveled by *Homo Erectus*

The site is located to the north of the Ksabi basin, an area with evidence of uninterrupted human presence throughout all phases of the ancient Palaeolithic.
The source is also the best way (and the necessary passage?) to reach the High Plateaus or the Mediterranean! It is therefore logical that the Acheulean, one of the ancient phases of the Palaeolithic, be found at Aïn Fritissa.

Alleged Mousterian tip - Source : Jacques Tixier, id.

Flint tip characteristic of the region of Aïn Fritissa - Source : Jacques Tixier, id.

This is evidenced by tools in the form of stones with partial modification on one or two faces, called «choppers», which are effective for smashing animal carcasses.
The later phases of the early Palaeolithic period are represented by handaxes, with ends or edges showing traces of use.

Pedunculate tip used as projectile (left) and tip (right) - Source : Jacques Tixier, id.

These reveal the function of this type of tool, which served to cut or dig the earth in the direction of the tip, probably to extract the tubers which were apparently consumed since Palaeolithic times.
The ancient Palaeolithic of Aïn Fritissa was also characterized by the presence of a particular tool with a very sharp transverse cutting edge called a cleaver. Typically African, this tool is also found in Europe, but only in southern Spain, once again proof of ancient exchanges between the two shores of the Mediterranean!

The many forms of *Homo Sapiens*

Of local origin or from elsewhere, *Homo Sapiens* is well represented in Aïn Fritissa : no less than 3,000 lithic tools are in the archaeological museum of Rabat. *Homo Sapiens* was very selective in the raw materials they used, and their tools were mainly made of flints of different colours, giving them a dazzling appearance: it is likely that there was attention given to allying the effectiveness of tools with certain «aesthetics»!
During this Aterian period, the manufacture of stone tools reached a high degree of specialization. Thus, the choice of cores – also called «nucleus» – was not random but rather obeyed strict criteria facilitating the creation of stone pieces transformed into:

- arrowheads for hunting ;
- scrapers for cutting meat;
- graters for working hides;
- chisels for sharpening bones.

It was also in Aïn Fritissa that a fine stone tool was found, cut on both sides in the form of a tree leaf and called by archaeologists: foliaceous handaxe point. This tool is strangely similar to the «laurel leaves» of the European Solutrean, a culture of the Upper Palaeolithic in Europe.
Given that the Aterian is much older than the European Solutrean, it is tempting to consider exchanges between the two shores of the Mediterranean since the Palaeolithic. Once again, the Oriental would be one of the venues for this exchange!
By the richness of the tools and, above all, its variety, Aïn Fritissa was a favourable refuge area for those who lived at the time when two major crises of the Aterian – around 60,000 and 25,000 years ago - greatly affected human groups who had set out to settle on the Atlantic coast.

Asymmetrical pedunctulated piece
Source : Jacques Tixier, id.

An «industrial» site?

The Aterian culture was followed by that of the Upper Palaeolithic, still represented by *Homo Sapiens*. Aïn Fritissa continued to be a point of attraction and probably became at that point a «workshop» for making elongated tools, called blades and lamellas. Several tools discovered here were not modified by retouching, but by a sort of crushing of the edge to give it the appearance of teeth, not unlike those of today's bread knives.
The tools of the end of Palaeolithic times show a great frequency of chisels, tools that were pointed at one of their two ends, which were likely used to make bone tools. One can conclude that stone was abandoned in favour of new materials.
Other tools, such as perforators, are also abundant.
As their name suggests, they were used to pierce bone tools in order to create eye needles… not unlike our sewing needles! They could also be used to pierce animal hides, thus facilitating their transformation into prehistoric clothing.
Aïn Fritissa was also frequented during the Neolithic, which makes it one of the rare sites in Morocco with traces of human activity in the same space over several thousand years.

Pedunculated piece - Source : Jacques Tixier, id.

FOR MORE INFORMATION
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SHORT HISTORY
OF GREAT DISCOVERIES

First discoveries

The first archaeological dig in Morocco dates back to the first century before common era. Roman general Quintus Sertorius, passing through what is now Tangier, heard a rumour: Antaeux, son of Gaïa, could be buried there. Sertorius carried out a dig at the Cromlech of Mzora- about ten kilometers from Asilah – a huge circular monument, unique in Africa. According to legend, he found a skeleton… almost 26 meters long!
20 centuries later, Dr. Pinchon, a military doctor in Oujda, conducted research on Palaeolithic surface sites around Oued Isly. He discovered the Grotte des Pigeons, then guided one of the first prehistorians, Paul Maurice Pallary, to the region. The latter was a malacologist who carried out the first systematic archaeological investigations, published beginning in 1908.
In 1914, Joseph Bourrilly, a jurist dispatched to Morocco, discovered Palaeolithic and Neolithic sites in the vicinity of Safsafat, El Mizen and Oued Lajref.

Archaeology, between war and peace!

En 1930, Reverend Bienvenu-Blondeau, who took care of children in Tafoughalt, recognized the importance of the Grotte des Pigeons, known locally as Kaf En Nejjar (carpenter's cave).
In 1939, as the word headed for war, Albert Lejay, passionate about prehistory, discovered Palaeolithic stone tools between Oujda and Berguent, on the left bank of Oued Isly.
In 1944, Armand Ruhlmann, ex-director of prehistoric antiquities in Morocco, undertook excavations of the Grotte des Pigeons, which resumed in 1947. He dug two trenches which still bear his name, in which he made several discoveries from the Middle and Upper Palaeolithic. He dies in 1948 of a hemmorage after a fall from an archaeological cut at El Aïoun, near Taourirt, he was never able to publish his discoveries.
His handwritten notes were only found in 2016!
In 1948, when peace returned, Carlos Posac Mon, philologist, published his archaeological research Oriental Morocco, particularly at Jbel Gourougou, where he discovered several Palaeolithic sites.
The military personnel stationed in the Oriental Moroccan once again devoted themselves to their passion: archaeological sites. Thus, in 1949, lieutenant Roger Lafanechère, assigned to Berkane, discovered a human skeleton – the Man of Berkane – in a small cave near Zaïo. Originally thought to be from the Palaeolithic, it eventually proved much more recent.

A prehistoric abbot!

The largest archaeological excavation of the Oriental did not begin until November 1951, with the abbot Jean Roche. To him we owe many major discoveries in the Grotte des Pigeons, particularly a trepanned skull bearing the traces of the oldest surgery in the world.

Modern excavations and great discoveries

Beginning in 1979, high-level archaeological research startedin the mountains of Oujda and the High Plateaus. They were extended to the eastern Rif beginning in 1995 and increased when excavations of the Grotte des Pigeons resumed in 2003, the continuation of those of the Rhafas cave in 2007 and archaeological and malacological research around Aïn-Bni-Mathar beginning in 2008.

The Grotte des Pigeons, in 1908 (postcard of the time)

Abbot Jean Roche excavated the cave between 1951 and 1955, and from 1969 to 1977, uncovering about 200 human skeletons from the Upper Palaeolithic, thousands of tools made of stone and bone, and animal bones.
The geological and stratigraphic context of his findings was clarified at the end of his research by Jean-Paul Raynal and André Debénath, two quaternary and prehistorian geologists, authors of several archaeological works in Morocco.

We can not cite here all the researchers at work in Oriental Morocco, as they number so many. Mainly attached to the Mohammed 1st University in Oujda and the National Institute of Archaeology and Heritage Sciences in Rabat, they work in partnership with foreign colleagues from universities such as Oxford in England, Rovira I Virgili in Spain, or the German Institute for Archaeological Research or the Max Planck Institute in Germany.

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