

GROTTE DES PIGEONS



Authorship

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Submitted on May 5, 2023.



WPI





ABOUT THIS BOOKLET

This booklet is intended to provide educational information about the Grotte des Pigeons from scientific, cultural, and economic perspectives.

All artifacts were imaged at Mohammed I University in Oujda, Morocco.

Find **3D models** and additional information about the team's project on our website:



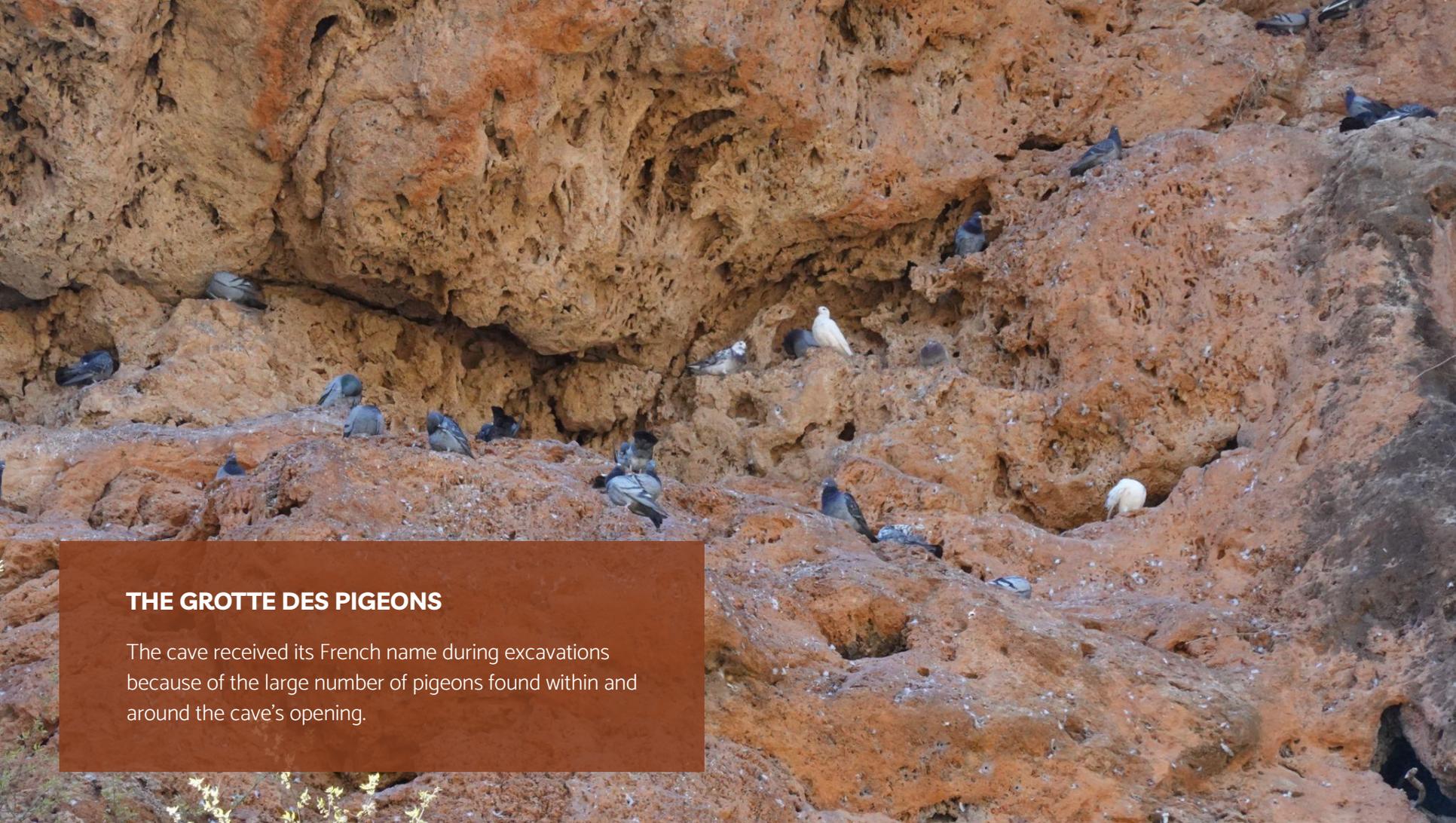
WPI Team Website

TAFOUGHALT, MOROCCO



THE GROTTA DES PIGEONS

The Grotte des Pigeons, also known as Tafoughalt due to its proximity to the namesake village, is a cave located in the Beni Snassen mountains of the Berkane province in Morocco's Oriental Region. Since its modern discovery in 1908, the cave has become internationally recognized as one of the most important sites for evidence of early human lifestyles in North-West Africa.



THE GROTTÉ DES PIGEONS

The cave received its French name during excavations because of the large number of pigeons found within and around the cave's opening.

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The cave is one hour from both Oujda, the capital city of the Oriental Region, and Nador, a coastal city known for its large Marchica Salt Lagoon.



Nador, Morocco

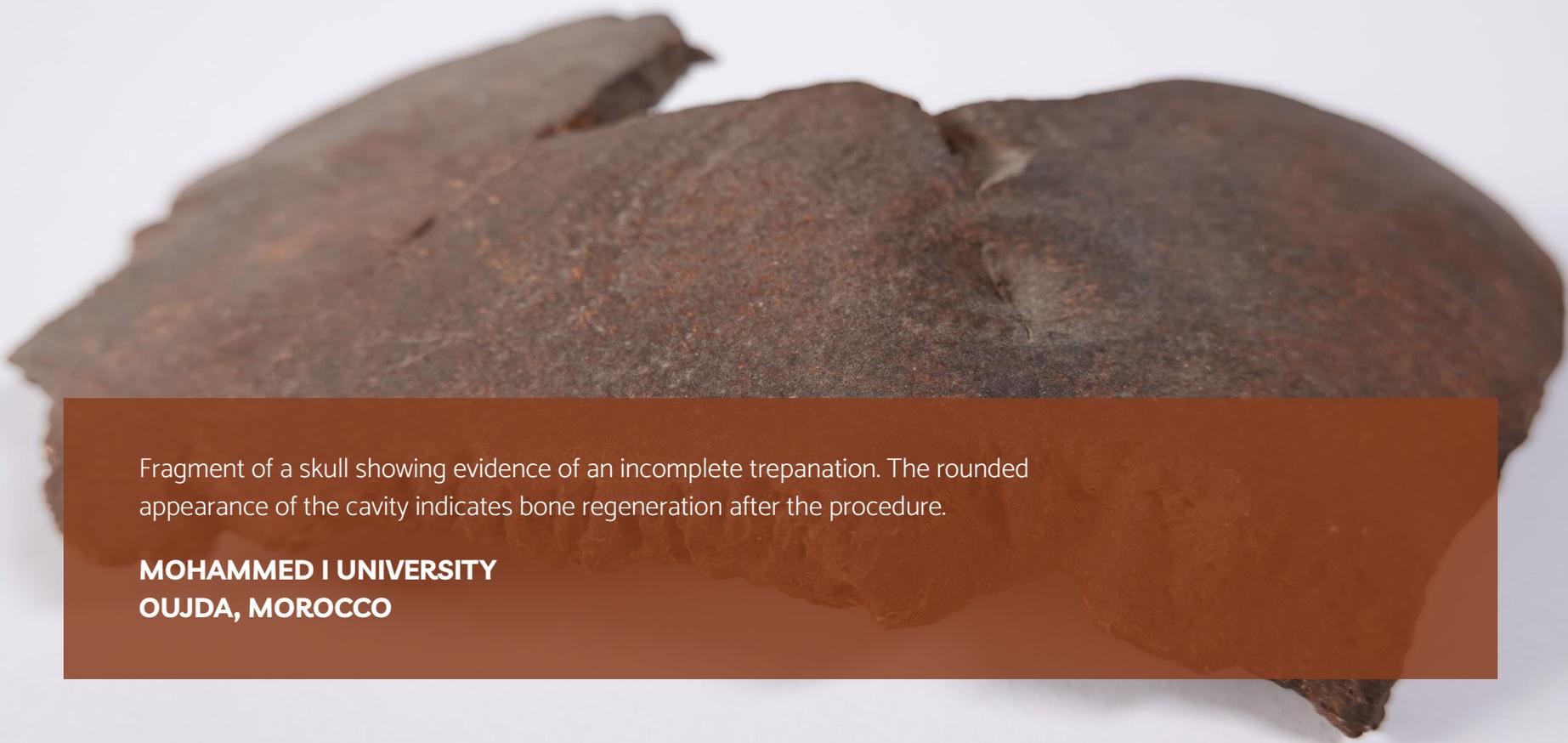


Oujda, Morocco

02. EVIDENCE OF TREPANATION

Early excavations of the cave yielded evidence of the successful practice of **trepanation**, a medical procedure in which a hole is scraped into the skull to relieve pressure build-up in the brain. Trepanned skulls located in the cave have been dated back **11,000 to 12,000 years**, making Tafoughalt the oldest known site of trepanation in the world.

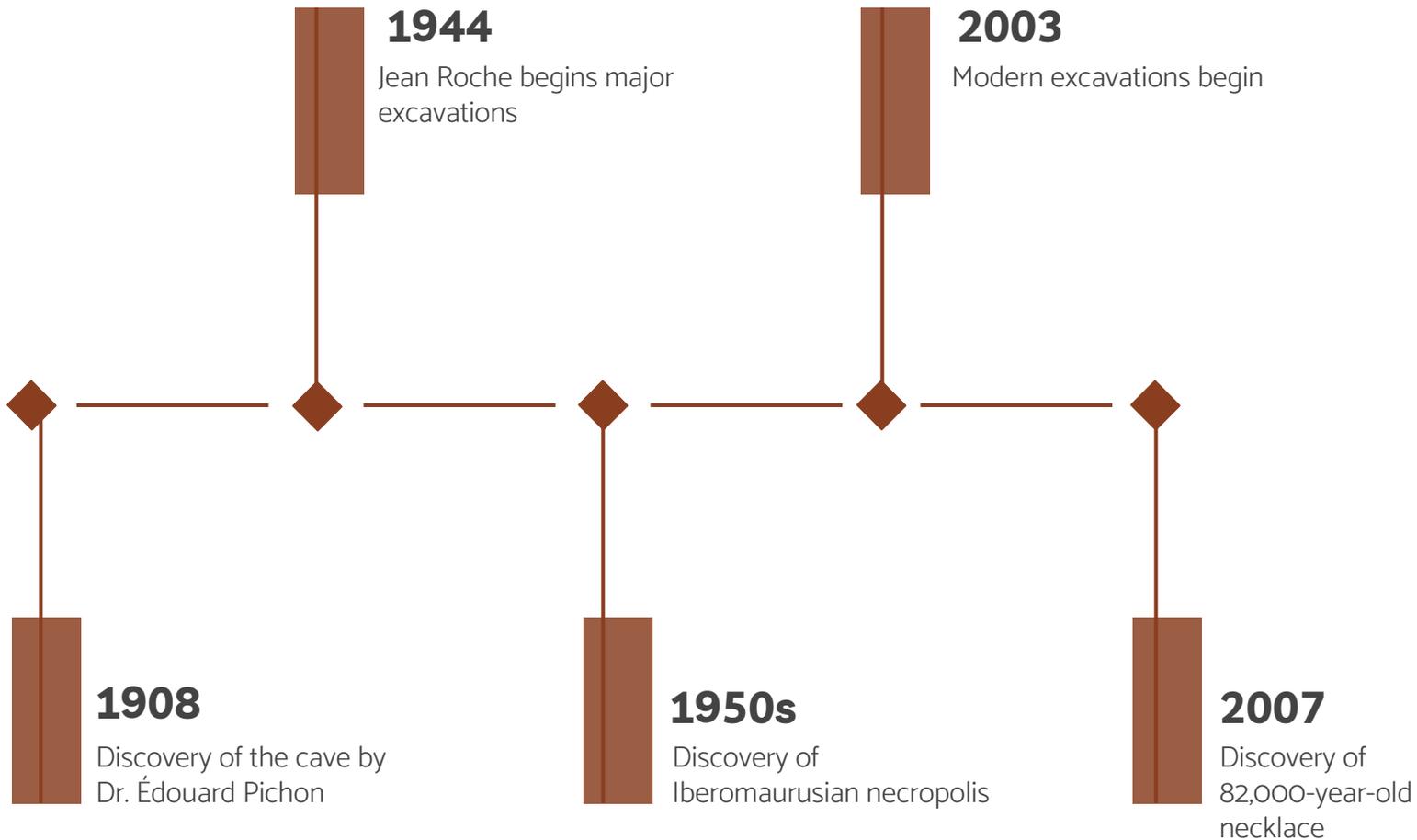




Fragment of a skull showing evidence of an incomplete trepanation. The rounded appearance of the cavity indicates bone regeneration after the procedure.

MOHAMMED I UNIVERSITY
OIJDA, MOROCCO

03. EXCAVATION SEQUENCE



ARCHAEOLOGICAL EXCAVATIONS

~200

Skeletons Excavated

4

Major Excavations

10m

Archaeological deposit



FRENCH OCCUPATION



In 1907, France began its conquest of Morocco, resulting in the creation of the French protectorate in 1912 following the Treaty of Fez. Under the protectorate, the French military used the Grotte des Pigeons in 1939 to shelter livestock and troops after artificially leveling the floor with lime mortar, a process which incidentally helped with the preservation of the sediment and artifacts below.

A photograph showing the ruins of French military barracks. The structures are made of light-colored stone and plaster, with many walls missing or crumbling. The site is surrounded by tall pine trees and a clear blue sky. The ground is dry and sandy, with some small green plants growing. In the background, a hillside covered in dense forest is visible.

**Ruins of French military barracks around the
Grotte des Pigeons built during French
occupation.**

Since 1944, decades of excavations have revealed layers of cave stratigraphy that create a detailed archive demonstrating the succession of human civilization dating back well over **100,000 years**.

Today, Tafoughalt remains one of few sites in the world to contain evidence of human life during the Upper Pleistocene, roughly 126,000 to 11,700 years ago.



Grey Series:
15,000 to 12,500 cal BP

Yellow Series:
85,000 - 15,000 cal BP

04. IBEROMAURUSIAN



Although humans inhabited the Grotte des Pigeons since the beginning of the Upper Pleistocene, excavations from periods of later habitation during the **Iberomaursian** mark its most significant discoveries.

The image shows a vast, mountainous landscape under a clear blue sky. In the foreground, a paved road with white lane markings curves through a valley filled with green trees and shrubs. The middle ground features rolling hills and a prominent, flat-topped mountain range with reddish-brown rock faces. A large, semi-transparent brown rectangular box is centered over the image, containing white text. The text describes the archaeological significance of the Tafoughalt region, highlighting its status as the world's earliest and largest sites for Iberomaurusian life and the microlithic bladelet culture, spanning from approximately 20,000 to 10,000 years ago. It also notes the importance of these humans to the Maghreb Region due to their potential link to the ancestry of modern North Africa.

Tafoughalt is the world's earliest and largest sites for Iberomaurusian life, a microlithic bladelet culture present from about 20,000 to 10,000 years ago. Humans of the Iberomaurusian are important to the Maghreb Region for their potential link to ancestry of modern North Africa.



TAFOUGHALT, MOROCCO

IBEROMAURUSIAN FUNERARY PRACTICES

The Iberomaurusian is marked distinctly by their use of bladelet technology which has been found in vast amounts across multiple layers of the Grotte des Pigeons. Cave stratigraphy also contains cut-marked and modified bone, retouched tools, and over 200 skeletons, making the Grotte des Pigeons one of the largest known burial sites from the period. Additional excavations have revealed Iberomaurusian funerary practices such as unique burial positioning and ochre staining of bones.

Iberomausian Habitation

The Grotte des Pigeons was regularly inhabited throughout the Iberomausian period despite changes in fauna throughout the grey series indicating significant climate changes during the time. There is a relationship between the appearance of pine and evergreen trees with periods of notable environmental cooling very close to the onset of the **Younger Dryas**, approximately 13,000 years ago. Dating evidence shows continued habitation until this time before there may have been a possible break in settlement from around 11-10,000 years ago due to environmental changes. It is thought that the cave was chosen by early humans not only because of its strategic view point, but also for its ability to sustain human life throughout these extensive environmental changes.

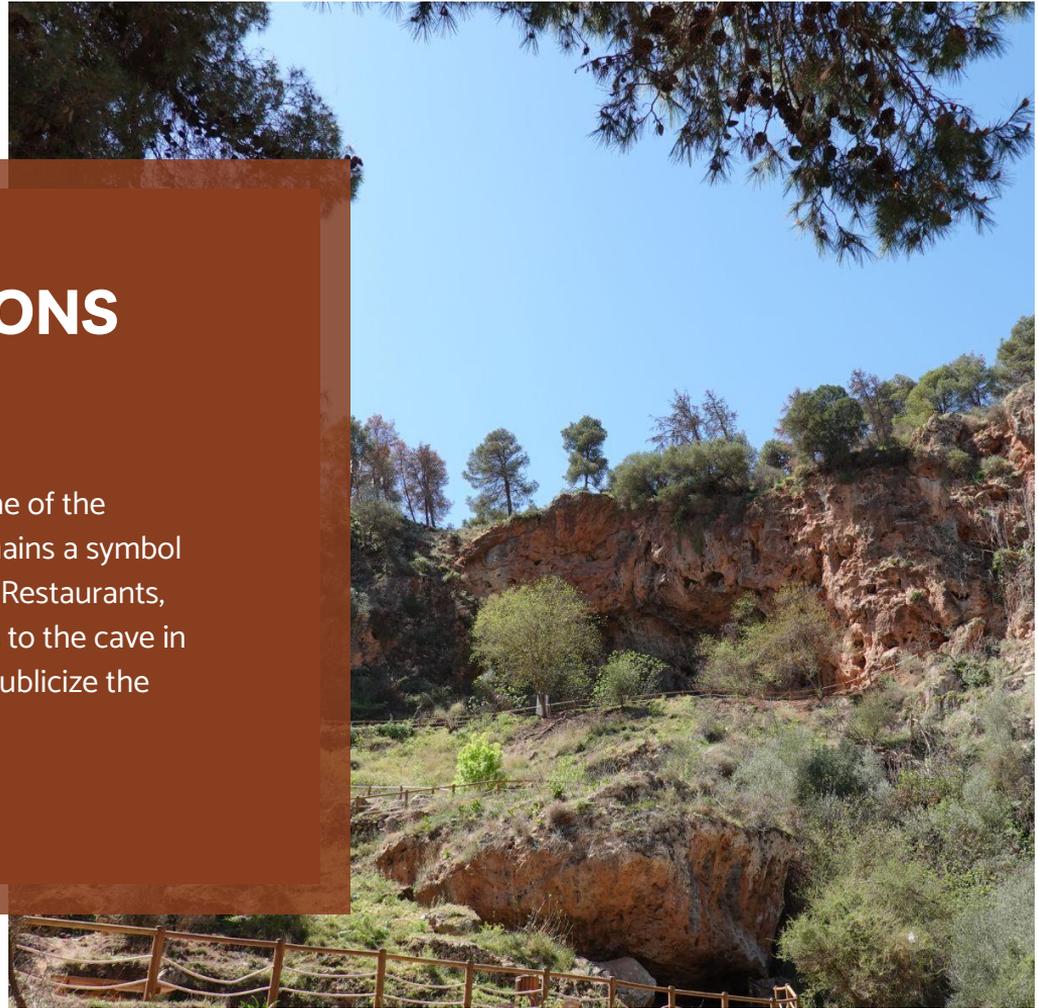




Despite its significant scientific value, the cave remained generally unknown across the Oriental Region until the discovery of an **82,000-year-old** necklace made of land mollusks. This piece marks some of the earliest human evidence of personal ornaments and symbolic behavior and became a symbol of the cave's cultural significance. Following this discovery, public visits to the cave increased as onlookers came to watch excavations in the early 2000s.

05. GROTTES DES PIGEONS TODAY

Today, the Grotte des Pigeons' connection to some of the earliest known evidence of human civilization remains a symbol of cultural pride for people of the Oriental region. Restaurants, hiking trails, and picnic spots have increased visits to the cave in recent years, and there are continuing efforts to publicize the cave's international scientific significance.





PRESERVING NATIONAL HERITAGE

King Mohammed VI's later commitment to the protection of cultural heritage aligned crown politics with the preservation of the Grotte des Pigeons, leading to the creation of protective infrastructure around the cave.



TAFUUGHALT ATTRACTIVEIONS



HIKING

The Beni Snassen mountains is a stunning limestone mountain range for hiking.

RESTAURANTS

Upon entering Berkane, the road filled with cafes and restaurants.



GROTTE DU CHAMEAU

Only ten minutes from the Grotte des Pigeons, the Grotte du Chameau contains some of the oldest stone inscriptions in Africa.