

# Excavations at Bizmoune Cave (Essaouira): first findings on the Aterian on the south Atlantic coast of Morocco

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## Introduction

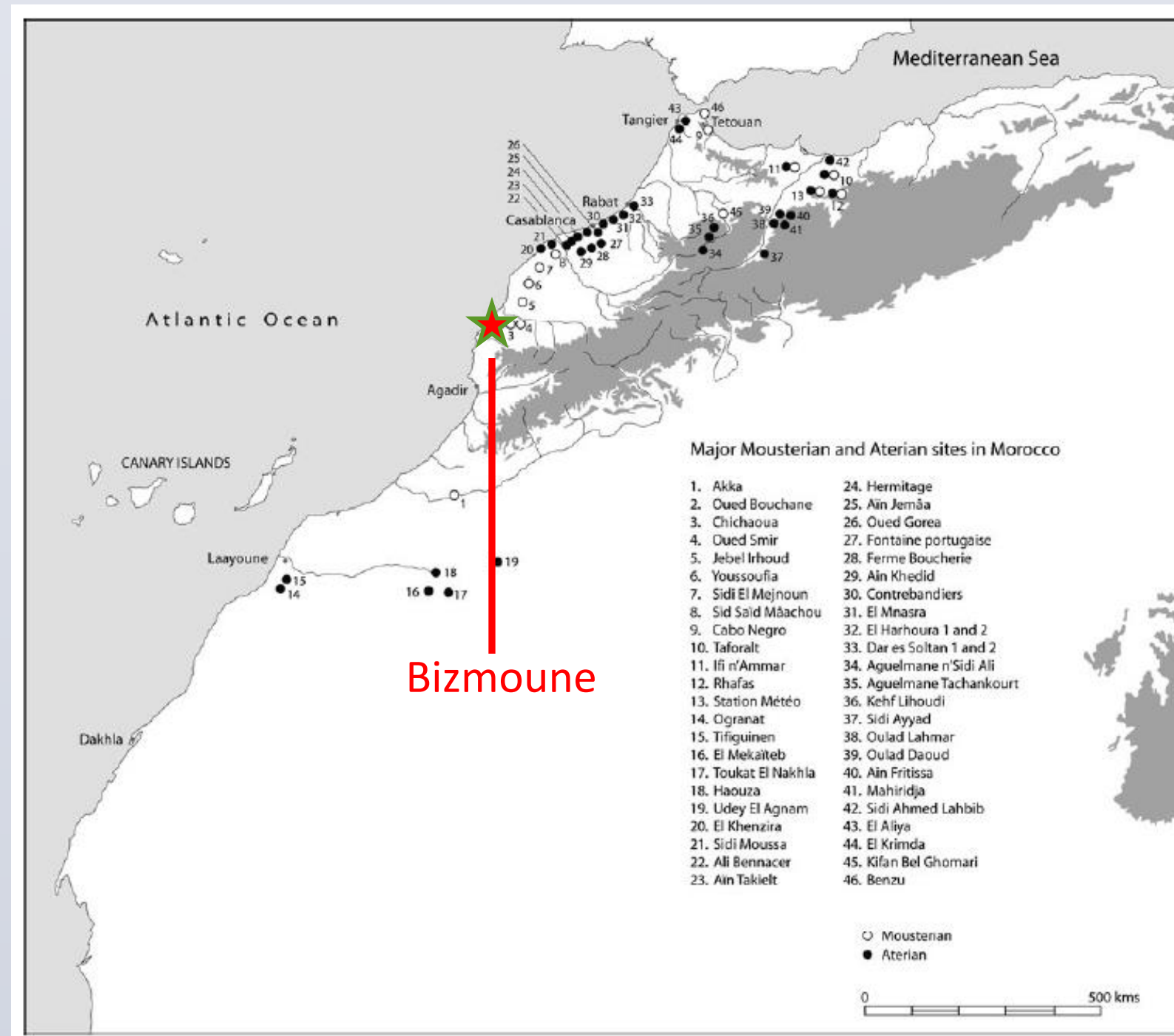
There is striking diversity in evolutionary trajectories across Africa and Eurasia between 200,000 and 30,000 years ago. North Africa was home to a distinctive population of humans as well as a unique archaeological complex, the Aterian, characterized by “precocious” appearance of traits such as personal ornaments. Recent research has done much to clarify (though not resolve) the temporal limits and climatic associations of the Aterian (e.g., Barton et al. 2013; Bouzouggar and Barton 2012; Dibble et al. 2012; Douka et al. 2014).

Ultimately, understanding the uniquely derived cognitive and behavioral features of late Pleistocene hominins requires documenting their behavioral flexibility and societal resilience. The next challenge is to understand the nature and causes of variability within the Aterian (and contemporaneous complexes).

Excavations at Bizmoune have been initiated with the general goal of expanding the ecological range of well excavated Aterian sites in Morocco. The site was selected in part because of its location: it is situated well to the south of better-known Aterian sites near Rabat, Casablanca and Oujda.

## Site Location and history of research

Bizmoune cave is located in southwestern Morocco, about 15 km inland from the city of Essaouira on the Atlantic coast. Bizmoune (“Lioness’s den” in the Berber language) was discovered and tested by one of us (AB) during a regional survey in 2007.



(from Bouzouggar & Barton 2012)

We returned for a 1-month field season in 2014 to expand earlier test excavations and better understand the site's stratigraphy, cultural sequence, and potential for large-scale excavation.

## The Site

Bizmoune cave is an open-plan, southeast-facing cave on the northern slopes of a short, seasonal drainage.



The floor of the main chamber is roughly 150m<sup>2</sup> in extent inside the current dripline. Additional intact archaeological deposits are preserved on the slope outside the dripline to the south. A second, somewhat smaller chamber northwest of the main chamber contains a chimney which opens to the surface.

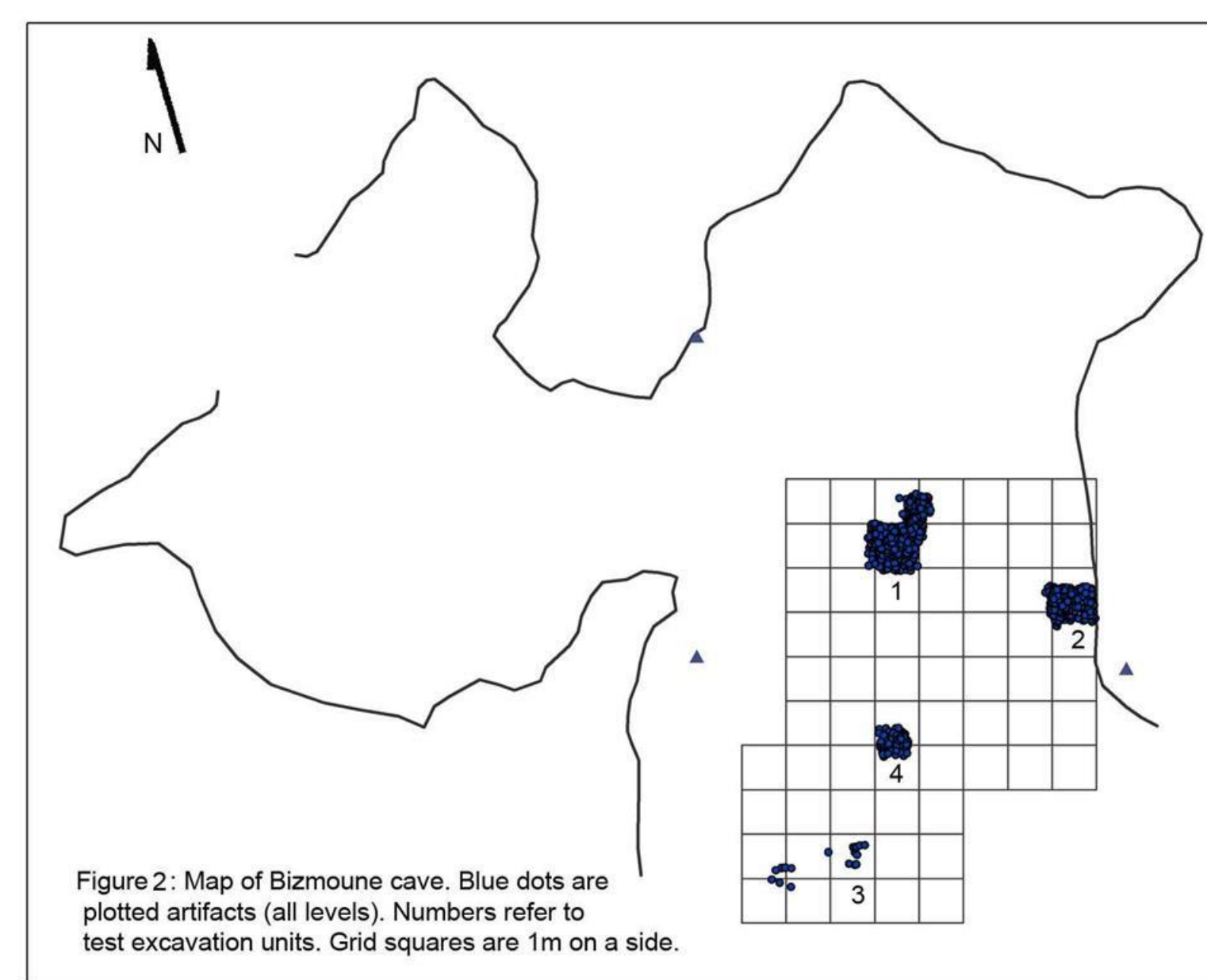
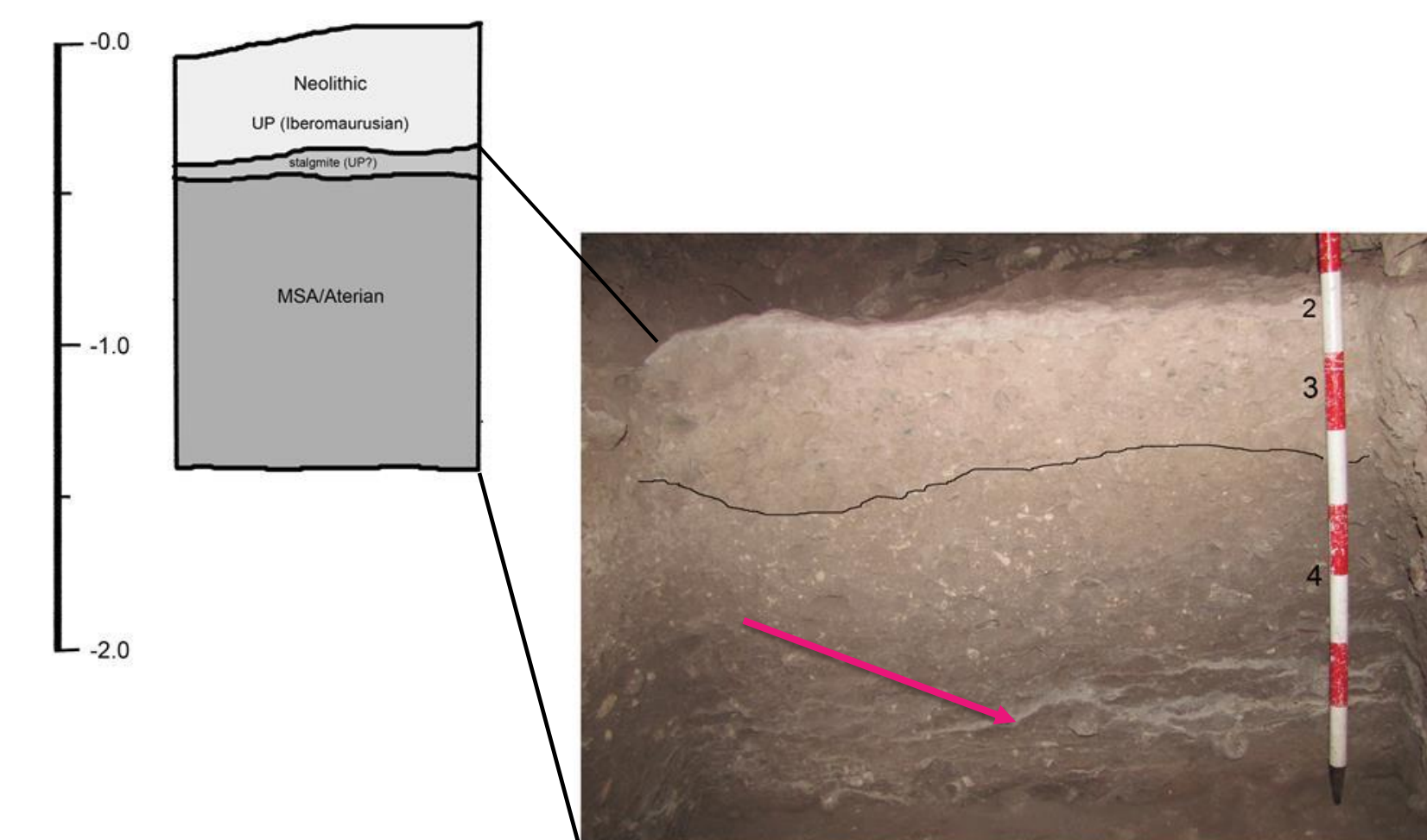


Figure 2: Map of Bizmoune cave. Blue dots are plotted artifacts (all levels). Numbers refer to test excavation units. Grid squares are 1m on a side.

Four test trenches were excavated into rich archaeological deposits in the southern half of the main chamber. Trenches 1 & 2 are inside the dripline; trenches 3 & 4 are on the slopes outside the dripline. Bedrock was not reached in any of the trenches. Archaeological deposits in test trench 1 are > 1.5m deep. Based on the elevation of a bedrock sill downslope of the cave mouth we estimate deposits may be as much as 3 m thick inside the cave.

## Excavation and stratigraphy

Sediment columns differ among the four trenches. Trench 1 has the deepest and most complete sequence.



Layer 1 consists of dark, organic-rich, comparatively loose sediment. The upper part of layer 1 (1a) contains Neolithic artifacts and abundant fauna; the lower part (1b) contains sparser Iberomaussian assemblages. Layer 2 is a thick, very hard flowstone with a few microliths. Layers 3 and 4 contain MSA/Aterian assemblages. Deposits in the upper part (Layer 3) are cemented and archaeological finds are sparse. Layer 4 is less cemented and locally quite rich in lithics and fauna. White stringers in the lower part of layer 4 (red arrow) are phosphatic. Study of micromorphology samples is ongoing, but layers 3 and 4 appear to be rich in combustion byproducts (ash).

Archaeological sequences in test trenches 2 and 4 are less complete. In trench 2, near the cave's east wall, the Upper Paleolithic sequence is thicker, and there is no stalagmite between the UP and the MSA/Aterian. Neolithic and Upper Paleolithic layers are missing in Trench 4: intact MSA/Aterian deposits lie just below colluvial slope deposits.



Trench 4 (east wall)

Stratigraphic columns in trenches 1, 2 and 4 contain multiple calcite crusts (indicated with red asterisks). Analyses of U-series samples are pending

## Results

### LITHIC ASSEMBLAGES

The MSA/Aterian layers contain typical Aterian artifacts:



A range of methods of lithic reduction are represented in the Bizmoune assemblage, including both Levallois method and bifacial *façonnage*. Levallois cores tend to be small and highly reduced.

### FAUNAS

The fauna of the MSA/Aterian layer 4 is particularly rich. Individual specimens show good preservation but many are calcite encrusted.



## Results (cont'd)

Preliminary study has identified the following species in the Aterian fauna:

- Gazella cf. atlantica* (Pleistocene gazelle)
- Equus cf. mauritanicus* (extinct zebra)
- Equus sp.* (unknown small equid)
- Oryx cf. dammah* (oryx)
- Bos primigenius* (aurochs)
- Connochaetes taurinus prognu* (wildebeast)
- Sus scrofa* (wild pig)
- Struthio camelus* (ostrich; egg shells only)

In addition to terrestrial vertebrates, Aterian layers at Bizmoune Cave also contain fragmentary shells of marine mollusca. To date we have identified mussels (*Mytilus sp.*) and razor clams (*Solen marginatus?*) but other species may be present. Wet-sieving will be necessary to recover the mollusk remains systematically.

As is typical for Aterian in the Maghreb Bizmoune also yields marine shell ornaments, not all *Nassarius*



## CONCLUSIONS

Bizmoune Cave represents the westernmost end of the geographic distribution of MSA/Aterian sites in North Africa. Further excavations at the site promise to contribute to understanding of geographic and ecological variability within Aterian material culture and adaptations, as well as late Pleistocene chronology in southeast Morocco. Bizmoune also has the potential to provide novel evidence about Aterian economies. The presence of edible marine shell in a site ca. 15 km from the coast is unexpected, as this is farther than shellfish are typically transported before processing. There is also evidence for a decline in occupational intensity toward the end of the Aterian occupation, between layers 4 and 3 (in trench 1) although we do not know if this is purely a local phenomenon.

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