

Evolution & Behavior

Early humans inhabited North Africa earlier than thought

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This Break was edited by Max Caine, *Editor-in-chief* - TheScienceBreaker

ABSTRACT

Humans dispersal into northern Africa is thought to be happened later than 2.6 million years ago. However, we discovered two archaeological deposits estimated to 2.4 and 1.9 million years ago at the site of Ain Boucherit, Algeria. The evidence argues either for a rapid dispersal of stone tool manufacture from East Africa or for possible multiple origins of stone tool



An Oldowan core freshly excavated at Ain Boucherit from which sharp-edged cutting flakes were removed.

Image credits: M. Sahnouni ©

East Africa is notably known for yielding the earliest [Oldowan stone tools](#) and hominin butchered animal bones. They were excavated at the site of [Gona in the Afar \(Ethiopia\)](#) dated to 2.6 million years ago (Ma). Hence, most paleoanthropologists believed that human ancestors and their lithic technology spread much later to other parts of the African continent and the rest of the old world. However, research carried out in Algeria uncovered near contemporary similar stone tools dated to 2.4 Ma, suggesting that early humans inhabited North Africa much earlier than thought.

Our team carried out fieldwork at Ain Boucherit (Algeria) to investigate the tempo and character of the earliest human occupation in North Africa. We

were able to discover two archaeological deposits estimated to 2.4 and 1.9 Ma, respectively for the lower and upper archaeological levels. The age of the sites was constrained using a combination of paleomagnetism, Electron Spin Resonance (ESR) dating, and biochronology of large mammals excavated together with the archaeological materials. Unlike East Africa where volcanic ashes amenable for absolute dating (e.g., $^{40}\text{Ar}/^{39}\text{Ar}$) are available, animal fossils such as pigs, horses, and elephants, known from other well-dated sites were used to corroborate the age derived from paleomagnetism.

The excavations of the archaeological deposits yielded 600 fossil animal bones associated with 250

stone tools. The fossilized bones include a variety of savanna type animals such as mastodons, elephants, horses, rhinos, hippos, wild antelopes, pigs, hyenas, crocodiles, etc. Currently, such animals occupy a relatively open savanna type habitats with a permanent body of water nearby. The stone tools comprise choppers, cores, and sharp-edged flakes made on limestone and flint cobbles collected from ancient stream beds nearby. The stone tools are typical of the Oldowan technology similar to those known from Gona (Ethiopia) dated to 2.6 Ma, although with subtle differences related to the flaking qualities of the various raw materials used in both assemblages.

Some of the fossilized bones, primarily of small and medium-sized bovids and equids, preserve stone tool cutmarks and hammerstone-percussed marks in both assemblages recovered from the upper and lower levels. Cutmarks are mainly characterized by narrow V-shaped cross-sections. Such hominin induced marks were located primarily on limb bones, on ribs, and on cranial remains, suggesting skinning, evisceration, and defleshing activities. The evidence from Ain Boucherit unambiguously shows that ancestral hominins exploited animal carcasses for meat and marrow. It is not clear yet whether or not they hunted, but the effective use of sharp-edged knife-like cutting stone tools at Ain Boucherit suggests that our ancestors were successfully competing with carnivores for meat and enjoyed first access to animal carcasses.

Very little was known regarding early hominin occupation and their activities in North Africa prior to the Ain Boucherit project. The Ain Boucherit

evidence shows that ancestral hominins actually made stone tools in North Africa that are near contemporary with the earliest known stone tools in East Africa dated to 2.6 Ma. An important question needs an answer is who made the stone tools discovered in North Africa. Currently, no hominin remains were found in North Africa that are contemporary with the earliest stone tools. As a matter of fact, no hominins have been documented in direct association with the earliest known stone tools from East Africa.

Paleoanthropologists for a long time believed that hominins and their material culture originated in the East African Rift. Surprisingly, the earliest known hominin dated to ~7.0 Ma, and the 3.3 Ma [*Australopithecus bahrelghazali*](#) have been discovered in Chad located in the Sahara 3000 km away from the East African Rift. Given the Ain Boucherit discovery, it can be argued that northern Africa and the Sahara may be a repository of troves of fossils and archaeological remains. Despite its considerable geographical distance from East Africa, the evidence from Ain Boucherit clearly argues for a rapid expansion of stone tool manufacture from East Africa or for possible multiple origin scenario of stone tool manufacture in both East and North Africa. Based on the potential of Ain Boucherit and the adjacent sedimentary basins, it can be suggested that hominin fossils and Oldowan artifacts as old as those documented in East Africa could be discovered in North Africa. Future research will focus on searching hominin fossils in the nearby fossiliferous deposits for the tool-makers and even older stone tools.