

Aurochs and rhinoceros fossils help us understand how the Sahara became a desert

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Bos primigenius skull found in Oued al Haï site. Credit: Jan van der Made

The finding of fossils of an aurochs (*Bos primigenius*) and a white rhinoceros (*Ceratotherium simum*), which lived between 57,000 and 100,000 years ago, at the Oued el Haï site (northeast Morocco), has allowed us to learn more about the climatic changes that led North Africa to become part of the Palearctic region and not the Afrotropical one, as one might expect. The increase in the Palearctic fauna is the result of the fall in global temperatures and the isolation caused by the Sahara. This desert, the largest in the world, began to form millions of years ago in a process subject to the fluctuations in the same climatic cycles that caused the glacial periods in Europe.

The find, published in the journal *Historical Biology* by an international

team with participation by the Centro Nacional de Investigación sobre la Evolución Humana (CENIEH), the Museo Nacional de Ciencias Naturales (MNCN-CSIC), the Institut Català de Paleoecologia Humana i Evolució Social (IPHES-CERCA), and Mohamed the First University in Oujda, helps with reconstructing the paleoclimate of the region and offers information about when the desertification process that gave rise to the Sahara took place.

"The proportion of Palearctic species we find in North African sites increases for the more recent ones, confirming the general contention, but in addition, these discoveries enable us to know how the Sahara Desert was formed, as this did not happen overnight," explains MNCN researcher Jan van der Made. "Continuing to find fossils from different epochs also allows us to reconstruct what the climate in the zone was like and improve the information needed for future climate models. " continues van der Made.



Ceratotherium simum found in Oued el Haï. Credit: Jan van der Made

The CENIEH geologist Alfonso Benito Calvo conducted the geomorphological and geological analysis of the valley where the aurochs and rhinoceros fossils were found. This area was previously

studied using drone photogrammetry, with which it was possible to map these fossils and analyze their geomorphological position, a low terrace whose characteristics indicate a high plateau valley with little incision capacity, which would have facilitated their conservation.

More information: Hassan Aouraghe et al, New materials of the white rhinoceros *Ceratotherium simum* and aurochs *Bos primigenius* from a Late Pleistocene terrace of the Oued el Haï (NE Morocco) - two elements of the Maghrebi Palearctic fauna, *Historical Biology* (2021).

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