

14/12/2018

When macaques lived in the Iberian Peninsula



A team of paleontologists led by the Director of the Institut Català de Paleontologia Miquel Crusafont (ICP), David M. Alba, has described in the *Journal of Human Evolution* 5-million-years-old dental remains that represent the oldest record of macaques in the Iberian Peninsula after the Messinian Salinity Crisis at the end of the Miocene.

Besides human beings, Barbary macaques (*Macaca sylvanus*) are the only primate species that can currently be found in the Iberian Peninsula (at least outside zoos and natural reserves). However, they are restricted to the Rock of Gibraltar, where they were introduced by humans in historical times from the African populations of this species that are still extant nowadays.

What most people are not aware is that *M. sylvanus* is a long-lived species that, during most of the Plio-Pleistocene (since 5.3 Ma [million years ago]), was widely distributed throughout Europe, until it became extinct just some thousand years ago, probably due to a combination of climatic and anthropic factors.

The currently available fossil record indicates that macaques dispersed from Africa to Eurasia during the latest Miocene (approximately between 5.8-5.3 Ma), probably thanks to the sea level drop associated with the Messinian Salinity Crisis that desiccated the Mediterranean Sea by this time. The identify of these earliest European macaques is still poorly known, as they are only known by fragmentary remains from Italy and Spain. Indeed, fossil macaque remains from

Europe are generally scarce, suggesting that they were not very abundant.

The dental remains described by Alba and colleagues consist of an upper third molar and a male upper canine from the site of Puerto de la Cadena (Murcia, Spain), which is dated to 5-4.9 Ma. The paper shows that these teeth are virtually indistinguishable from those of extant macaques from North Africa (except for a slightly larger size) or other Plio-Pleistocene sites from Europe. They have been tentatively assigned to the extinct subspecies *M. sylvanus prisca* on the basis of age and geographic provenance.

The macaque fossil record in the Iberian Peninsula mostly consist of fragmentary dental remains, which are particularly scarce during the Pliocene. Thus, the macaque remains from Puerto de la Cadena are important because they represent the oldest fossils of *Macaca* after the Messinian Salinity Crisis, thereby confirming that macaques apparently inhabited this area throughout the whole Plio-Pleistocene.

The fossil record fascinates paleontologists and lay people alike because it brings to life long-extinct animals. However, tracing back a living species five million years back in time is no less fascinating by any means, because morphological stasis (in front of continuous environmental change) is arguably as relevant, from a scientific viewpoint, as recording gradual evolutionary change.

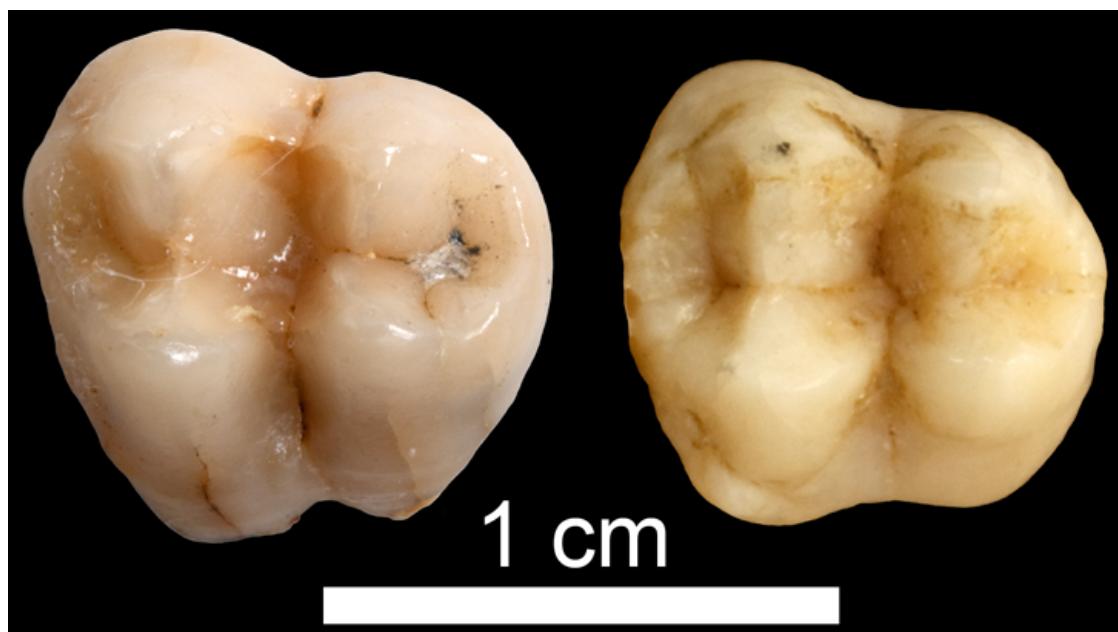


Figure 1. Fossil left upper third molar of *Macaca sylvanus* cf. *prisca* from Puerto de la Cadena (left) as compared to the same tooth of extant *Macaca sylvanus sylvanus* from North Africa housed in the American Museum of Natural History (right). (Photographs by David M. Alba)

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References

Alba, D. M., Delson, E., Morales, J., Montoya, P., & Romero, G. (2018). **Macaque remains from the early Pliocene of the Iberian Peninsula**. *Journal of Human Evolution*, 123, 141-147. DOI: <https://doi.org/10.1016/j.jhevol.2018.07.005>

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