

Why are there no hyenas in Europe?

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This is a hyena. Credit: SINC.

A team from the National Museum of Natural Sciences (CSIC) has analysed the impact of climate change on spotted hyena survival in Europe over 10,000 years ago. These changes played an important role, but the scientists say studies are still needed to look at the influence of human expansion and changes in herbivorous fauna on the definitive extinction of this species across the continent.

"Climate change in the past was not directly responsible for the [extinction](#) of the spotted [hyena](#) in southern Europe, but it was a factor in its disappearance", Sara Varela, lead author of the study and a researcher at the National Museum of Natural Sciences (CSIC), tells SINC.

According to the study, which has been published in the *Journal Quaternary Science Reviews*, the hyena populations of Africa and Eurasia became separated during the glacial maximum. And "the climatic conditions in southern Europe 21,000 years ago were extreme for this species", says Varela.

At that time, the European climate was undergoing "drastic" changes, as were herbivorous fauna populations and human expansion. According to the expert, "the survival of the hyenas could have been affected by the combination of these three factors acting in synergy, but not by the action of the climate alone".

Her team studied [climate change](#) in the past and identified the most favourable areas for the hyena in Europe, using modelling to look at the various climate scenarios of the Pleistocene. A second model estimated the severity of [climate conditions](#) for the survival of these animals. "The climatic conditions in the south of Europe were at all times within the tolerance range of this species", Varela points out.

Everything happened in the late Pleistocene

The spotted hyena (*Crocuta crocuta*) became extinct at the end of the late Pleistocene (around 10,000 years ago), coinciding with the last glacial maximum and the expansion of *Homo sapiens*. Large species disappeared forever, but the spotted hyena held out for a while and modified its geographical range in order to survive.

The distribution of the spotted hyena, a carnivore that is common in sub-Saharan Africa, has changed "substantially" from the Pleistocene until the present. Today it is only found in Africa, but during the Pleistocene (almost one million years ago), the spotted hyena also inhabited Eurasia.

More information: Varela, Sara; Lobo, Jorge M.; Rodríguez, Jesús;

Batra, Persaram. "Were the Late Pleistocene climatic changes responsible for the disappearance of the European spotted hyena populations? Hindcasting a species geographic distribution across time" *Quaternary Science Reviews* 29(17-18): 2027-2035, Aug 2010.
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