

## Prehistoric Bears Ate Everything And Anything, Just Like Modern Cousins

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*Summary:* By comparing the craniodental morphology of modern bear species to that of two extinct species, researchers have discovered that the expired plantigrades were not so different from their current counterparts. The cave bear, regarded as the great herbivore of the carnivores, was actually more omnivorous than first thought. The short-faced bear, a hypercarnivore, also ate plants depending on their availability. The work offers key insights into the evolution of the carnivore niches during the Ice Age.

### FULL STORY



Top: skull of the North American short-faced bear (*Arctodus simus*) from the Museum of Natural History in New York. Bottom: and skull of the European cave bear (*Ursus spelaeus*) from the Museum of Natural History in Berlin.

*Credit: Photos courtesy of Borja Figueiro / SINC*

By comparing the craniodental morphology of modern bear species to that of two extinct species, researchers from the University of Málaga have discovered that the expired plantigrades were not so different from their current counterparts. The cave bear, regarded as the great herbivore of the carnivores, was actually more omnivorous than first thought.

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The team of palaeontologists have reconstructed the trophic ecology, or eating habits, of two extinct bear species that lived during the Pleistocene (between 2.59 million and 12,000 years ago): the short-faced bear (*Arctodus simus*) of North America and the cave bear (*Ursus spelaeus*) of Europe. The morphometric analysis carried out on the eight bear species in existence today has confirmed that prehistoric bears were not fussy eaters.

'Knowing what the extinct bears ate is of utmost relevance to finding out about the evolution of carnivore niches in the Pleistocene when climatic conditions were changing', explains Borja Figueirido, lead author of the study and researcher for the Ecology and Geology Department of the Faculty of Sciences at the University of Málaga. Scientists have discovered that, even at that time, bears were 'great opportunists' thanks to their morphological and ecological flexibility.

The study, published recently in the *Journal of Zoology*, focuses on two species of prehistoric bear because scientists believed that they had disparate feeding preferences. It was presumed that the short-faced bear was a carnivore and the cave bear an herbivore; 'probably the most herbivorous species of the *Ursus* genus', asserts Figueirido.

'The study has revealed that the craniodental morphologies of these two bears are more suited to the omnivorous diet than the specialised diet previously put forward', the researcher points out.

### **Fossilised skulls, great biomarkers**

The researchers studied the osteological material of the current species (skull and jaw) and the same anatomical elements of the fossilised remains of the extinct bears, conserved in various international museums.

Through a statistical analysis, the experts determined the patterns of morphological variation in bears in order to prove that, rather than ancestral/descendent relations, 'the pattern had more relation to trophic ecology than to phylogenetic heritage', highlights Figueirido.

Given the glaciations of the Pleistocene (in the Quaternary period), prehistoric bears, with morphologies similar to those of present-day omnivores, ate a bit of everything depending on the resources available to them, determined by the climatic conditions. For the palaeontologist, 'during that period there was, in principle, a wide variety of prey and vegetation available, but there was also competition amongst the predators of the time'.

Today there are cases of bears with specialised eating habits. From a morphological and ecological perspective, the polar bear (*Ursus maritimus*), exclusively carnivorous, and the panda bear (*Ailuropoda melanoleuca*), strictly herbivorous, have the greatest challenge to change their eating habits in the face of climatic change. 'Although not as specialised as that of a lion, if the few resources that the giant panda and the polar bear depend on were to disappear, their situation would be complicated', confirms Figueirido.

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### **Story Source:**

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**Journal Reference:**

1. Figueirido et al. **Ecomorphological correlates of craniodental variation in bears and paleobiological implications for extinct taxa: an approach based on geometric morphometrics.** *Journal of Zoology*, 2009; 277 (1): 70 DOI: 10.1111/j.1469-7998.2008.00511.x
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