

The Cave Bear: A Vegan Gone Extinct

An inflexible diet led to the disappearance of this large mammal

Tübingen, 07/15/2016. Senckenberg scientists have studied the feeding habits of the extinct Cave Bear. Based on the isotope composition in the collagen of the bears' bones, they were able to show that the large mammals subsisted on a purely vegan diet. In the study, recently published in the scientific publication "Journal of Quaternary Science," the international team proposes that it was this inflexible diet that led to the Cave Bear's extinction approximately 25,000 years ago.

Today's Brown Bears are omnivores. Depending on the time of year, they devour plants, mushrooms, berries and small to larger mammals, but they will also take fish and insects. "The Cave Bear is a very different story," says Professor Dr. Hervé Bocherens of the Senckenberg Center for Human Evolution and Palaeoenvironment (HEP) at the University of Tübingen, and he continues to explain, "According to our newest findings, these extinct relatives of the Brown Bear lived on a strictly vegan diet."

Cave Bears (*Ursus spelaeus*) lived in Europe during the most recent glacial period, approximately 400,000 years ago, until they became extinct about 25,000 years ago. With a length of 3.5 meters and a height of 1.7 meters at the shoulder, these bears, which ranged from Northern Spain to the Urals, were noticeably larger than their modern-day relatives. Despite their name, they did not actually live in caves but only used them for hibernation. Nevertheless, the occasional death of animals in various European caves over several tens of thousands of years eventually led to enormous accumulations of bones and teeth from these large fur-bearing animals.

Several of these bones from the "Goyet Cave" in Belgium have now been examined by the international team around Prof. Bocherens, with a special focus on the Cave Bear's diet. "We were particularly interested in what exactly the Cave Bears ate, and whether there is a connection between their diet and their extinction," explains the biogeologist from Tübingen.

To this end, scientists from Japan, Canada, Belgium and Germany conducted isotope studies on the collagen from the bears' bones. Collagen is an essential organic component of the connective tissue in bones, teeth, cartilage, tendons, ligaments and the skin. The examination of the isotope composition of individual amino acids in the collagen shows that the bears lived on a strictly vegan diet.

SENCKENBERG GESELLSCHAFT FÜR NATURFORSCHUNG

Dr. Sören B. Dürr | Alexandra Donecker | Judith Jördens

Senckenberganlage 25 | D-60325 Frankfurt am Main

T +49 (0) 69 7542 - 1561

F +49 (0) 69 7542 - 1517

pressestelle@senckenberg.de

www.senckenberg.de

SENCKENBERG Gesellschaft für Naturforschung | Senckenberganlage 25 | D-60325 Frankfurt am Main

Member of the Leibniz Association

PRESS RELEASE
07/15/2016

Contact

Prof. Dr. Hervé Bocherens
Senckenberg Center for Human
Evolution and Palaeoenvironment
(HEP)
Eberhard Karls University Tübingen
Phone 07071- 29-76988
herve.bocherens@uni-tuebingen.de

Judith Jördens

Press Office
Senckenberg Gesellschaft für
Naturforschung
Phone 069- 7542 1434
pressestelle@senckenberg.de

Publication

Naito, Y.I., Germonpré, M.,
Chikaraishi, Y., Ohkouchi, N.,
Drucker, D.G., Hobson, K.A.,
Edwards, M.A., Wißing, C.,
Bocherens, H., accepted for
publication. Evidence for herbivorous
cave bears (*Ursus spelaeus*) in
Goyet Cave, Belgium: Implications
for paleodietary reconstruction of
fossil bears using amino acid $\delta^{15}\text{N}$
approaches. *Journal of Quaternary
Science*. DOI: 10.1002/jqs.2883

Press Image



Adult Cave Bear with cub from
Goyet Cave in Belgium. © RBINS

Press images may be used at no
cost for editorial reporting, provided
that the original author's name is
published, as well. The images may
only be passed on to third parties in
the context of current reporting.

This press release and the images
are also available at
www.senckenberg.de/presse

SENCKENBERG

world of biodiversity

“Similar to today’s Giant Panda, the Cave Bears were therefore extremely inflexible in regard to their food,” adds Bocherens, and he continues, “We assume that this unbalanced diet, in combination with the reduced supply of plants during the last ice age, ultimately led to the Cave Bear’s extinction.”

Previously, there had been much speculation as to the cause of the large bears’ disappearance. Was it due to increasing hunting pressure from humans? The changing temperatures, or the lack of food? “We believe that the reliance on a purely vegan diet was a crucial reason for the Cave Bear’s extinction,” explains Bocherens.

During the investigation, another interesting aspect came to light. Even the collagen of two Cave Bear cubs indicated a vegan diet – despite the fact that they were suckled by their mother. The scientists interpret this finding as a reflection of the nursing female’s diet.

“We now intend to examine additional Cave Bear bones from various European locations with this new method, as well as conducting controlled feeding experiments with modern bears, in order to further solidify our proposition,” adds Bocherens by way of a preview.

*To study and understand nature with its limitless diversity of living creatures and to preserve and manage it in a sustainable fashion as the basis of life for future generations – this has been the goal of the **Senckenberg Gesellschaft für Naturforschung (Senckenberg Nature Research Society)** for almost 200 years. This integrative “geobiodiversity research” and the dissemination of research and science are among Senckenberg’s main tasks. Three nature museums in Frankfurt, Görlitz and Dresden display the diversity of life and the earth’s development over millions of years. The Senckenberg Nature Research Society is a member of the Leibniz Association. The Senckenberg Nature Museum in Frankfurt am Main is supported by the City of Frankfurt am Main as well as numerous other partners. Additional information can be found at www.senckenberg.de.*

2016 is the Leibniz year. On the occasion of the 370th birthday and the 300-year death anniversary of polymath Gottfried Wilhelm Leibniz (*7/1/1646 in Leipzig, † 11/14/1716 in Hanover), the Leibniz Association is organizing an extensive topical year. Under the title “The best of all possible worlds” – a Leibniz quote – it brings into focus the diversity and timeliness of the subject matter currently studied by the scientists at the 88 Leibniz institutions across the Federal Republic of Germany. www.bestewelten.de