

# The European bison did not dwell in the forest

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Threatened with extinction - the European Bison. Credit: Rafal Kowalczyk

Together with colleagues from Germany and Poland, paleontologist Prof. Dr. Hervé Bocherens of the Senckenberg Center for Human Evolution and Paleoenvironment (HEP) and the Department of Geosciences at the University of Tübingen examined the oldest known bones of bison from Europe. Their research revealed that European Bison were "mixed eaters" who preferred open landscapes to a life in the

forest. These findings have a direct impact on the current conservation concept for these animals, which are threatened with extinction. The associated study was financed by the Polish National Science Centre (grant no N N304 301940) and published today in the renowned scientific journal *PLOS ONE*.

Europe is currently home to approximately 3,000 free-roaming [bison](#). Since 2013, a small herd of these dark brown giants can again be found in Germany.

"Time almost ran out for the European Bison," says Prof. Dr. Hervé Bocherens of the Senckenberg Center for Human Evolution and Paleoenvironment (HEP) and the Department of Geosciences at the University of Tübingen, and he adds, "In Germany, the last free-roaming bison was shot in 1775. In 1927, Europe's last wild bison fell victim to a rifle bullet in the Caucasus."

With this, both subspecies of the European Bison had been exterminated in their natural habitat – the lowland bison and the mountain bison.

It was only due to reintroduction programs involving animals from zoos, wildlife parks and national parks that the European Bison could be saved from extinction. However, the study published today under the aegis of the scientist from Tübingen shows that the conservation concepts for the European Bison are in need of revision: "We have studied the dietary and living habits of this largest of all European mammals on the basis of ca. 12,000 to 10,000 year-old bison bones from Northern Germany, Denmark and Southern Sweden," explains Bocherens, and he adds, "The crucial question we asked in this context was whether forests are really the preferred and most suitable habitat for the European Bison."



The European Bison is the largest wild mammal in Europe. Credit: Rafal Kowalczyk

Until now it was assumed that the European Bison – in contrast to its steppe-dwelling relatives in North America – primarily thrive in forests. Based on the examination of isotopes from the age-old bones of the large mammals, Bocherens and his colleague, Prof. Dr. Rafal Kowalczyk of the "Mammal Research Institute" in Białowieża, Poland were able to verify that European Bison were "mixed eaters." "The ratio of carbon and nitrogen isotopes in the bones indicates that the bison's diet in the early Holocene included leaves as well as grasses and lichens. According to this, they were certainly not restricted to forests," explains Bocherens.

Thanks to this flexible diet, the bison were not in competition with the much more specialized Aurochs and European Elk and were able to survive even harsh winters.



European Bison in the Białowieża Forest. Credit: Tomasz Kamiński

As the open landscapes receded – due to climate change, encroaching forest cover and the ever-increasing agricultural activities of their human inhabitants – the bison were pushed back into the forests. "There, the bison's population decreased to such a degree that the species almost disappeared entirely."

Today, Europe's wild bison only survive the winters with the aid of humans. During the cold season, the forests simply do not offer sufficient food for these imposing animals. "The severely threatened European Bison would stand a much better chance if they – as they did in the past - could inhabit open landscapes, which would offer a much wider food spectrum," muses the biologist from Tübingen, and he summarizes, "The conservation concepts for the European Bison are



therefore in need of a fundamental revision."



Measuring the skull of a European Bison prior to sampling. Credit: Tomasz Kamiński

**More information:** Bocherens H, Hofman-Kamińska E, Drucker DG, Schmölcke U, Kowalczyk R (2015) "European Bison as a Refugee Species? Evidence from Isotopic Data on Early Holocene Bison and Other Large Herbivores in Northern Europe." *PLoS ONE* 10(2): e0115090. [DOI: 10.1371/journal.pone.0115090](https://doi.org/10.1371/journal.pone.0115090)

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