Who was eating salmon 45,000 years ago in the Caucasus?

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Why did anatomically modern humans replace Neandertals in Europe around 40,000 years ago?

One hypothesis suggests that Neandertals were rigid in their dietary choice, targeting large herbivorous mammals, such as horse, bison and mammoths, while modern humans also exploited a wider diversity of dietary resources, including fish. This dietary flexibility of modern humans would have been a big advantage when competing with Neandertals and led to their final success. In a joint study, Professor Hervé Bocherens of the University of Tübingen, Germany, together with colleagues from the Zoological Institute of the Russian Academy of Sciences in Saint Petersburg, Russia and the Royal Belgian Institute of Natural Sciences in Brussels, Belgium have found at a cave in the Caucasus Mountains indirect hints of fish consumption by Neandertals. The scientists challenge the hypothesis of evolutionary advantage of modern humans on basis of dietary choice. Bone analyses ruled out cave bears and cave lions to have consumed the fish whose remains were found at the Caucasian cave.

The hypothesis on dietary differences between modern humans and Neandertals is based on the study of animal bones found in caves occupied by these two types of hominids, which can provide clues about their diet, but it is always difficult to exclude large predators living at the same time as being responsible for at least part of this accumulation. One such case occurs in a cave located on the northern slopes of the Caucasus Mountains, called Kudaro 3.

There, the bone fragments of large salmon, migrating from marine water to their freshwater spawning places, were found in the Middle Palaeolithic archaeological layers, dated to around 42 to 48,000 years ago, and probably deposited by Neandertals. Such remains suggested that fish was consumed by these archaic Humans. However, large carnivores, such as Asiatic cave bears (Ursus kudarensis) and cave lions (Panthera spelaea) were also found in the cave and could have brought the salmon bones in the caves.

To test this hypothesis, the possible contribution of marine fish in the diet of these carnivores was evaluated using carbon, nitrogen and sulphur isotopes in faunal bone collagen, comparing these isotopic signatures between predators and their potential prey. The results indicate that salmons were neither part of the diet of cave bears (they were purely vegetarian, like their European counterparts) or cave lions (they were predators of herbivores from arid areas).

"This study provides indirect support to the idea that Middle Palaeolithic Hominins, probably Neandertals, were able to consume fish when it was available, and that therefore, the prey choice of Neandertals and modern humans was not fundamentally different," says Hervé Bocherens. He assumes that more than diet differences were certainly involved in the demise of the Neandertals.

More information: Bocherens, H., Baryshnikov, G. and van Neer, W. Were bears or lions involved in salmon accumulation in the Middle Palaeolithic of the Caucasus? An isotopic investigation in Kudaro 3, *Quaternary International*. doi 0.1016/j.quaint.2013.06.026

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